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ORIGINAL ARTICLES.

THE HYDRIATRIC TREATMENT OF TYPHOID FEVER IN PRIVATE PRACTICE.

BY CHR. SIHLER, M.D.,
OF CLEVELAND, OHIO.

PROF. OSLER'S words that the hydriatric treatment of typhoid fever is "scarcely feasible" in private practice must do a great deal of harm, if, as is more than probable, his book on *Practice* finds an extensive sale. To aid in undoing that harm, and to induce my honored colleagues to use the hydriatric treatment in private practice, is the purpose of the following remarks.

The conviction that the Brand method is not only an excellent one, but that it can also be carried out in private practice, is based on nearly three years of experience. During this time about eighty patients have been treated and about 4000 baths have been given. Among these patients were children from nineteen months and grown persons from fifty-three years down. Some were delicate and some were robust; some coming under treatment early, some late. Some cases required only from 20 to 30 baths, whilst many required from 50 to 60; a number were given over 100 baths. All conditions were represented, the only exception being the wealthy class—a fact demonstrating that the mass of the people do not furnish insurmountable obstacles to the use of cool baths, providing that they have full confidence in their physicians. My patients were chiefly good people, and good people are willing to undertake something unpleasant for a higher good. Physicians practicing among the well-to-do and educated classes should have no trouble with this method.

In the *Maryland Medical Journal* of January 23, 1892, I find an article on the hydriatric treatment of typhoid fever, for which I feel very grateful to the writer. Nevertheless I shall introduce the subject here for the purpose of expressing my dissent from a particular opinion. The passage to which I refer is the following:

"The reports of European physicians upon the subject are interesting to American practitioners as showing what has been done there, but as a guide in our own practice Dr. Sihler's own observations are much more valuable. The question is not how Europeans have borne the baths, but how our people will bear them. The German and French statistics (except Brand's) are largely from military hospitals, and we have no warrant for believing that our own delicate private patients will react as well to the baths as the strong and hardy European soldiers. Brand declares that his method cannot, for various reasons, be thoroughly tested in civil hospitals. We are, therefore, shut in for our own guidance to experience learned from private patients in our own land. Such experience will necessarily be very slowly gained, and it is very doubtful whether the method will ever be adopted or fairly tried by our profession in America."

When I read these lines I was astonished, and asked myself, Where and when will there be an end to the objections to the Brand method? The reasonable ones have been answered to the satisfaction of scientific medicine, but an indefinite string of unreasonable ones still wait to be answered. Meanwhile the typhoid fever patients in the United States are allowed to suffer and to die. How can we gain experience in this country if we do not try the method?

I was somewhat consoled when Dr. Brand wrote me that he had heard such objections before. Thus, a physician from Silesia (in the middle part of Germany) had expressed his doubts whether a method useful among the people of Pomerania (in the northern part of Germany) would similarly affect the inhabitants of his province further south, and a French physician was disinclined to believe that the French would derive the same benefit from the baths that the Germans had found. I expect soon to hear that the method may be very beneficial in Cleveland, but that this is no evidence whatever that the people of New York or Chicago will react as well to the baths. I expect to hear that a special experimental physiology and pharmacology on American dogs, rabbits, and frogs must be written, these being more delicate than the hardy German and French animals. Has anyone ever heard such objections raised when a new drug was to be introduced in this country; and have we any special therapeutics for the delicate Americans?

Protesting, then, against the unproved and unreasonable assumption that Americans differ from their European kinsfolk in physiologic make-up, as well as in pathology and reaction to therapeutic agents, let me speak of some special points in the passage.

1. The reader of the passage will be under the impression that in France the good results from the baths have largely been obtained among soldiers. This is not the case. Glénard, in 1883, published a pamphlet in which he complains of the neglect of the Brand method in the French army, with a

death-rate of 35 out of 100 cases of typhoid fever, while in the German army, using Brand's method, the rate was 10 per cent. Further, the work of Tripier and Bouveret, advocating and describing the Brand method, was based on the study of the disease in non-military hospitals. Bouveret, in 1892, published the report of a series of 100 cases in the Hôtel Dieu, Lyons, with a death-rate of 2 per cent.; and in a declaration in favor of the method, signed by a number of physicians of Lyons, it is specifically stated that this practice is carried out with their private patients, and that their own wives and children are thus treated.

2. Of the 1223 cases, with 12 deaths, treated accurately after Brand, 559 occurred in civil practice, with 2 deaths, the rest in military practice—the 559 cases including men, women, and children as private practice offers them.

3. The fact that the mortality from typhoid fever among soldiers is naturally higher than in civil practice ought to make the results obtained among soldiers particularly valuable, and not of less value, showing clearly the great efficacy of the method. The most stubborn objector in the United States, if he wants to be consistent, should at least not refuse to utilize the observations made on soldiers when he is called to treat persons of the same type, *i. e.*, young men.

In passing I would express my doubts as to whether the germs care very much for muscle and as to whether muscular persons have any advantage in fighting the disease over persons of a less ideal physique.

4. The article mentioned speaks of partial collapse as an ordinary effect of the bath, and the passage quoted might lead one to think that the cool baths were something in the nature of blood-letting, starvation, excessive bodily exertion, a severe surgical operation, etc., which only robust persons could endure. If a gardener watering some parched plants were told that he was doing something heroic, something that was lowering the vitality of his plants—would he not smile? Similarly, one who has used the baths must smile when he discovers that a similar notion regarding the baths seems deeply imbedded in the minds of physicians. To think of a procedure that may bring down the pulse from 136 to 120; that keeps the tongue moist and clean during an acme of two weeks; that tones up the digestive functions; that produces sleep and banishes delirium, encourages an abundant flow of urine and prevents bed-sores—to think of such a measure as a debilitating one, as not suitable to a delicate organism, might call forth a smile if tears and death were not the result of the false opinion. The writer of the passage does me the honor to say my observations are of some value. Hoping to aid in inducing others to begin using the method, I shall make my experience during the last six months the subject of some remarks.

CASE I.—Mrs. W., thirty-two years old, was confined in normal labor, Monday, August 8, 1892. On July 30th she had been taken ill with a chill and fever, the fever continuing. August 1st her temperature was 103°, and gradually declined, so that four days later I found it at 100°; for one day she had diarrhea, so that the most probable diagnosis was a mild case of typhoid. She felt fairly well on the day of her confinement, and on the following days, although there was a decided elevation of temperature. But on Thursday afternoon she again felt chilly, and the following night was a bad one; she had diarrhea, could not sleep, and the first signs of delirium showed themselves. On Friday morning her temperature was 104°; pulse from 130 to 140; and she had the genuine typhoid look. In fact, as the next weeks showed, the disease had blazed up again, to take its regular course from now on. In the afternoon her temperature was 105°, and she was desperately ill; a bad prognosis was something not unreasonable. I concluded to use the Brand method, although her baby was not yet five days old. I procured one of my excellent nurses, whom I had well trained—and the method was carried out to the letter. After using the baths over night the appearance of the patient had changed; she no longer looked like a typhoid-fever patient, and the baths, which were given from the beginning of the genuine attack, continued to do their duty; the patient, without hypnotics, always slept well—in fact, slept both day and night; always took an interest in the treatment, introducing the thermometer herself and watching the measurements. The nurse, a small woman, always put her in and took her out of the tub without assistance; the tongue of the patient always remained moist, absolutely without coating, and sufficient nourishment could be taken. But for the elevation of temperature and the pulse one would not have supposed her a very ill person. Her pulse during the worst days would not be over 140, and it was from 16 to 20 less after the bath.

CASE OF MRS. W.

Day of treatment.	Average temperature before the baths.	Average temperature after the baths.	Maximum temperature of the day.	Number of baths.	Temp. of baths, F.	Duration of baths, minutes.
1	104.5	104.0	105.5	8	70	17
2	104.5	104.0	105.0	8	66	15
3	103.5	102.7	105.5	8	66	15
4	102.5	102.0	103.5	7	67	13
5	104.0	103.0	105.5	8	68	12
6	104.5	104.0	105.5	8	68	13
7	104.5	103.5	105.5	10	68	10
8	104.5	103.5	105.5	11	64	10
9	104.3	103.8	105.5	8	66	10
10	103.5	103.0	104.5	8	68	10
11	103.5	103.5	104.5	8	68	10
12	103.5	103.0	104.5	8	68	10
13	103.2	102.5	105.0	8	68	10
14	103.2	102.0	104.5	8	68	10
15	102.0	101.0	103.5	4	68	10
16	102.0	101.0	102.5	2	68	10

To reassure the reader as to the diagnosis, I add that the lochial discharge was excessive in amount and duration; diarrhea, with distention of the bowels, was well developed during the second and third weeks, and the plain and characteristic rose-spots made their appearance in the beginning of the second week.

The preceding table gives the details of the case, so far as the temperature and the baths are concerned. One hundred and twenty-two cool baths were given.

I think it will be admitted that the case was a grave one, and I wish that the reader could have seen her before the baths were used. Here, then, we have the case of a lady who was born in America, who, when the hydriatric treatment was begun, had a baby five days old, who was ill nine days before her confinement, and who prior to this illness had gone through a four weeks' siege of nursing her four older children through attacks of scarlet-fever. Instead of making me hesitate, it was for these reasons that I was all the more anxious to have the cool-bath treatment carried out accurately and from the very beginning. I will add that the patient and her husband were soon convinced of the value of the method, and made no trouble for the nurse. (The neighbors, of course, had prophesied the worst.) After going through an attack of gall-stone colic, with great distention of the gall-bladder, the fever had disappeared by the 13th of September, just one month after we had given her the first day's hydriatric treatment. I then stopped my regular visits, as she was able to be out of bed and walk about the house. I could not help comparing her with a sister-in-law whom I had treated some years previously, if the orthodox method may be called treatment. This patient had had neither the high temperature nor the high pulse of Mrs. W., but during her illness several bed-sores appeared. The fever had subsided during the middle of November, and yet when I happened to call at the house in March she was still too weak to be about.

It will be seen by the preceding table that a number of baths were of only ten minutes' duration. The nurse had to shorten them on account of the setting-in of fainting. In such cases the baths can be given oftener; but we did not for a moment think of discontinuing, on that account, the cool-bath treatment. It will also be seen that the reductions of the temperature by the baths were insignificant, not as great as we ordinarily expect to obtain. This circumstance leads me to speak of another case.

CASE II.—John L. was seen by me in consultation five days after his illness had begun, not because his fever had been high, but because he complained of want of breath, his respirations being labored and frequent, as if some mechanical obstruction existed, as, *e. g.*, from bronchitis. His lungs, however, showed no physical changes whatever, and I explain this condition by the gravity of the infection, the direct influence of the fever-poisons on the respiratory center. The skin was cool and covered with clammy sweat. Omitting details, I merely state that Mr. L. took in all 167 baths. During the first two weeks the temperature of the bath varied. We commenced, after a few preparatory baths, according to the formula; but, as I expected, on account of the corpulence of the patient we obtained no reductions by the baths of 68°, and, therefore, reduced the temperature to 66°, 64°, 62° successively, and even to 60°; we also increased the duration of the baths to twenty minutes, and once even to twenty-five minutes—*but we could not reduce the temperature of the patient.* At times a reduction of ½° or 1° was obtained, but just as often no impression whatever was made. After a bath at 62°, of twenty minutes' duration, the temperature remained as before; nor did eight such baths, one after the other, have any different effect; nor did we find any effect if prolonged to fifteen or to thirty minutes. In spite of this fact, I observed all of the good effects from the baths ordinarily observed when the temperature can be reduced two degrees or more. The feeling of oppression and want of air soon left him, the sweating ceased, although the fever, which had been 103.5° at my first visit, went up to 104° and higher; he always slept; was able to step into the tub, four or five steps away from his bed; he took large quantities of nourishment; his tongue had a very thin coating and he passed a great deal of urine, at times as much as eight pints a day. Toward the fourteenth day of his illness his abdomen was tense, and he several times passed from two to four ounces of blood with his discharges; these being of a syrupy consistence. Of course we did not discontinue the baths on that account, especially as he felt relieved by the loss of blood. About the twenty-first day of the disease blood again appeared in the stools. For eleven days bath after bath (60° to 68° F.) was given, eight a day, without any appreciable reduction of temperature. Critical sweating occurred after that, with some fall of temperature. Toward the eighteenth day, when the fever began to abate and the patient was sweating more or less, we used the lukewarm bath of from twenty to thirty minutes' duration, with affusions, three pails of cold (60°) water. The patient continued this procedure perhaps somewhat longer than was absolutely necessary, and hence the great number of baths.

Loomis, in his *Practice*, says: "My experience in the use of cold applications leads me to believe that unless it is possible to maintain a low range of temperature after 4 or 5 baths, very little is gained by their continuance."

This I consider false and pernicious teaching, and am of the opinion that Mr. L.'s case adds another proof of the correctness of the view that the usefulness of the hydriatric treatment by no means centers in the reduction of temperature, and that it is an error

to look upon the cool bath simply as an antipyretic. This is also the opinion of one of the authorities in the hydriatric treatment to whom I wrote for information as to how far one should go in trying to bring about a reduction of temperature in these stubborn cases, and if one might not expect the good effects of the baths without lowering of temperature. His answer was as follows: "You are certainly on the right track if you have come to hold the view that one should not carry the effort to cool off the patient too far, and that one should be satisfied with the favorable influence on the remainder of the symptoms aside from the reduction of temperature. I am convinced that the advantage of the cool-bath treatment over the medicinal antipyretic treatment consists in this, that, while the antipyretic medicines produce a great lowering of temperature, they at the same time are of bad influence on the general condition of the patient; the baths produce a moderate but often repeated lowering of the temperature, but they increase the resistance of the organism by their invigorating influence on the heart and the nervous system."

I suppose the question how far one ought to go in trying to obtain a lower range of temperature is one still *sub judice*, and one that will bear further discussion. Observations must be multiplied before it will be definitely answered; but my case at least shows that one should not send home the tub after four or five baths have failed to produce a lower range of temperature. Whether a special case will bear baths of 60° and 62° F., or have the baths prolonged beyond fifteen minutes, I cannot say. I should not wish to advise this course in every such case. It must be left to the individual judgment of the physician, who must be governed by his observations on the effects of the previous baths.

While my experience has shown me that good effects can be obtained without a reduction of temperature, I am convinced that the best effect cannot be obtained without producing shivering of the patient. Whatever light future investigations may throw on this process, this, at least, is certain: that during this condition powerful contractions of the voluntary and involuntary muscles take place which, in turn, must influence for good the movement and distribution of the fluids of the body, and result in an approximate normality of the functions of the nervous system.

CASE III.—Mary F., seven years of age, so far as the temperature and baths are concerned, will be described in detail, in order to show how many baths, etc., should be given to children. Note the following table.

The patient came under treatment after an illness of only a few days; but already a dry, smooth tongue, diarrhea, and tympanites were present; she had not slept for several nights, and was moaning continuously. The table shows that the case was not a mild one. While the baths greatly modify for the better the symptomatology of the disease, yet they by no means efface the character of the case. The number of baths necessary, the height of the fever, the rapidity of the rise of the temperature after the bath, all give an insight into the nature of the case, and allow one to make inferences as to what would and might have happened had no baths been used. The baths not only reduced the temperature, but they had an excellent effect on the general condition. The little patient slept all of the time; there was not the facial expression characteristic of a grave disease. The tongue improved, and presented a normal appearance long before the disease had run its course; her abdomen never became tense, the diarrhea never excessive, and there were no involuntary discharges.

CASE OF MARY F.

Day of treatment.	Average temperature before the baths.	Average temperature after the baths.	Maximum temperature of the day.	Number of baths.	Temp. of baths, F.	Duration of baths, minutes.
1	104.0	101.0	105.0	3	80	15
2	104.0	101.5	105.0	7	72	12
3	104.0	101.5	105.0	8	72	12
4	104.7	101.5	105 5	9	71	12
5	104.5	101.5	105 0	8	72	12
6	103.7	101.7	105 0	10	72	12
7	103 2	101.2	104 0	9	72	12
8	103.5	100.0	104.5	9	72	12
9	103.0	99.0	104.0	9	72	12
10	103.2	98 5	104.0	5	70	10
11	103 7	98.5	104.0	5	72	10
12	102.5	98.5	103.0	5	67	8
13	102.5	98.0	104.0	3	72	8
14	102.5	98.0	104.0	4	68	8
15	102.2	90.0	104.0	3	72	6
16	101.5	100.0	103.0	1	68	5

This case demonstrated that an American child experiences the same beneficial results from the baths that French or German children do. Of course, American children do not like to go into a cool bath more than grown persons do, and he who will be deterred by their cries had better not begin. Coaxing and begging the children will, of course, only prolong their sufferings. When the time has come, the quicker the child gets into his bath the better. A child is more likely to brace up for a stranger, a nurse, than for his parents, whose sympathies it can expect to enlist. I have now treated a number of children—a girl of nineteen months with over one hundred baths; a boy of three years with forty baths; a girl of twelve years with sixty-five; a girl of eight years with one hundred and four; a boy of twelve years with fifty; a girl of four years with fifty; a boy of twelve years with ninety, and a number of others.

One of these cases, a four-year old girl, Stella M., had a temperature registering almost always 104°, and the baths given were of 68° F. and ten minutes' duration. We commenced with warmer baths; but

the mother herself saw that to obtain the desired effect she had to resort to the Brand formula—baths of 68° and ten minutes' duration in the case of children. Wilson, in Keating's *Encyclopedia*, says that the baths should not be prolonged beyond five minutes, and the temperature should not be below 75° F. Brand thus differs from Wilson, and lays stress on the point that the baths should not differ in temperature from those for grown persons, because a child will cry out and fret as much in a warmer bath without deriving the desired benefit. In my practice I have been following Brand more closely than Wilson. With few exceptions, my baths have been of ten minutes' duration, often of 68° F. temperature, almost always, excepting in very mild cases, below 75°, the temperature that Wilson advises. So far I have seen no harm from following Brand. As his second edition of 1877 contains the report of one hundred and six cases without any death occurring in his own practice, I think it safe to follow Brand's directions.

Another case, a boy twelve years old, required ninety baths, and the method had to be carried out with more than ordinary stringency. The boy came under treatment ten days after the illness had begun —*i.e.*, from four to six days too late. I found him in the deepest form of delirium, with tympanites and roseola present, and with cough and dry râles all over the chest very marked. The first discharges I saw contained blood, and the pulse could not be counted. The following is the record of the second day of hydriatric treatment:

SECOND DAY OF HYDRIATRIC TREATMENT OF CHARLES BECKER.

Hour.	Temperature before bath.	Temperature after bath.
12	104.0	100.0
2	104.5	
4	105.0	101.0
6	104.0	
8	104.0	100.5
10	103.0	
12	105 0	104.0
2	103.5	100.0
4	105.0	104.0
6	105.0	102.0
8	105 0	
11	103.0	

Temperature of baths 68°; duration 15 minutes.

The table shows that two hours after the bath the fever had attained its former height. The baths were partially successful—it being more easy to prevent harm by their aid than to remove the harm done. After five or six baths the patient became more quiet, and rested from one to one and a half hours between the baths. He did not, however, come out of his delirium, nor could his pulse be counted even after the bath. After about four days of bathing according to the formula, he again became careless, and we then gave baths of from 90° to 96°, of thirty minutes' duration, with three parts of cold water (66°) poured over the head during the last ten minutes of each bath. These baths were given from every three to four hours. After two such baths he became more quiet, but after twenty-four hours he had another bad night, with restless sleep, interrupted by spells of loud crying-out, the cause of which I do not understand. After six days of treatment, during which time sixty baths were given, some signs of improvement appeared, slight perspiration existed, more quiet sleep set in, and he is now (ill four weeks) recovering rapidly, although his pulse, showing the intensity of the attack, remains high. Aside from the other good effects, the baths had the advantage of enabling us to give the patient some drink. At any other time it was impossible for the attendants to administer anything in the way of drink to the boy, but when near the end of the bath consciousness was regained so far that the patient could be induced to take a small cup of milk by threatening him with a prolongation of the bath, of which, in spite of his delirious condition, he was afraid.

CASE IV.—Mrs. F., the mother of Case III, was taken down with the fever, but required only about sixty baths, the disease in her case being mild. After using the baths a few days she remarked to me that she did not mind it so much to step into the tub.

This leads me to note the behavior of different patients in regard to the baths. When I began using the baths I feared that women would give me more trouble than men, but this preconceived notion proved false. The patients who seemed to suffer most, and needed more exhortation and gentle persuasion, were men, and I recall particularly a six-foot, strong man, whom I could hear moaning while in his bath, when I was ten feet away from the house. It must not be forgotten that the typhoid-fever poison, by affecting the brain, also interferes with the ordinary will-power of the patient. The unpleasant sensations are, I admit, an obstacle to the use of the method, just as the bitter taste is an obstacle to the administration of quinine. But who would discard quinine on account of its obnoxious taste?

CASE V.—Karl S., a young man, over twenty, had been ill for more than a week when he came under my care. There was not, after from 6 to 8 baths, the good effect upon the nervous system that I am accustomed to see; but after omitting the alcoholic stimulants, giving one-fourth of a grain of morphine in suppository, and being particular about the affusions to the head, the patient slept all of the time. When this satisfactory condition had lasted about two days he again became very restless, and the condition that the books describe as *delirium versatile* was present. The baths had the desired effect on the fever, which had not been very high. To convince myself of the efficacy of the baths I myself gave two; but even when the temperature of the patient was

98.5° he was as restless as ever, talked incoherently, and could barely be kept in bed. Morphine, which had acted favorably before, had no further good effect. I then tried a dose of sulfonal, with no immediate effect at least, and at the same time I gave what I call the soothing bath, a bath of 94°, of thirty minutes' duration, and three pails of cold water—60° —to be poured gently over the head during the continuance of the bath. The first bath, at about four o'clock, had very little effect, but after the second bath the patient went into a soft slumber, and we had no further trouble. These baths we continued, making them later a little cooler (from 86° to 88°) and shorter (from fifteen to twenty minutes), from three to four times a day.

I mention this case, in the first place, to call attention to this soothing form of the bath, which I had found useful in the insomnia of insane persons. A second reason for mentioning the case is this: it was the first time in my experience with the hydriatric method that a modification of the instructions given to the attendants was necessary. I doubt if such a contingency will arise when one treats a case from the beginning. I suppose physicians who cannot see their patients very often might feel a disinclination to adopt the method, but I am of the opinion that the method can be carried out even in country practice. Even if an interruption of the baths should at times become necessary, the patient would not be any worse off than if he were treated by the expectant method.

CASE VI.—Miss S., fifteen or sixteen years of age, came under my care, having been treated by another physician, and having been ill about two weeks. She had been losing blood by the bowel in rather large amounts, so that she appeared quite pale when I saw her, though not in a condition of collapse. Her pulse was over 120; her temperature 105° F. In spite of the loss of blood I gave her a lukewarm full bath (from 86° to 88°), and used two pails of water from the hydrant (72°) and well (60°) for affusion to the head, bringing her into a sitting position for that purpose. The bath, during which she was well rubbed, lasted ten minutes. Her hair was cut off before the procedure. I administered the bath myself, of course, and remained at the house to watch the effect. I found that this was very satisfactory. The pulse went down from 12 to 16 beats, the temperature to 101° (not too much, it will be seen), and she went to sleep. That a lukewarm bath had such a marked effect on the temperature shows that in such a weak condition of the organism the resisttance to the refrigeration is very feeble. She slept so soundly that she did not awake when, on leaving the house an hour after the bath, I again took her temperature. She had had no sleep for some time, and her mother informed me that she had expressed a great longing for it during the previous days. I ordered cold compresses to the abdomen and anterior part of the thorax and baths similar to that which she had received, providing severe hemorrhages should take place. During the following days I ordered baths of 80°, to last five minutes only, if the temperature reached 103° in the rectum. These always reduced the temperature and produced sleep. (The medicines which she received were perhaps similar to those that she had been taking before the water was used.) She continued to lose blood for several days, so that the little hope I had for her life grew less, but the bleeding diminished, and she is now convalescent. The tongue was perfectly smooth, dry, and cut up by a number of fissures. Since using Brand's method I have not seen such a tongue amongst my patients, and the change which the baths produce in the typhoid-fever tongue should be sufficient to make converts to the Brand method. The tongue is not acted upon directly by the baths, but its condition is due to the influence of the baths on the organism in general; now if the tongue can be kept in such a normal condition (see Case I), may not the other organs be affected in a similarly favorable way?

To recapitulate (1) Americans, women, children, and men, alike, experience the same beneficial effects from the cool baths that European patients do.

2. In cases in which the baths fail to reduce the temperature of the patient, they should not be discontinued; they will still have a beneficial effect.

3. The prolonged lukewarm bath (from 90° to 96° F.), with gentle effusions of cool water (from three to four pails, of from 60° to 70° F.) to the head is often an excellent remedy in case of great excitement and inability to sleep (*delirium versatile*).

4. Women take to the baths more kindly than men.

5. When the fever is very high and the elevation of temperature is marked soon after a bath, it is advisable to repeat the baths sooner than the formula requires (three hours), and to give them every two hours.

6. Even when patients have reached the third week, and with hemorrhages, baths, and water more or less cool should be used according to the directions of Brand in the treatment of the "degenerated" cases. Parched, smooth, fissured tongues are unknown to the hydriatric treatment.

7. The method can be used in country practice.

A few words of advice to those thinking of using the hydriatric method in private practice may not be out of place here.

1. First of all get a bath-tub made. I had one six months before I had a case. My tubs are made of galvanized iron, with a strong iron rod around the rim, four-cornered, 5¾ feet long, 2 feet wide, and 16 inches deep. If you will have a tub you will use it, and if you have your tub, thermometers, etc., on hand, your patients will be under the impression that you know all about the method. My bath-tubs are amongst the most useful of my instruments.

2. Be present during and after as many baths as

possible, and especially at first; this both for the patient's sake, who will be encouraged, and for your own sake, who will be instructed.

3. As soon as possible instruct one or more suitable persons in the use of the method. Well-to-do persons will be glad to employ them, and even those less favorably situated can have a nurse, because not much money need be spent for drugs, and because the physician can restrict the number of visits if one of his trustworthy nurses is taking care of the patient. If the family wishes or is compelled to do its own nursing, you may send such a skilled person to the house for from twelve to twenty-four hours to give instructions in the use of the baths, thermometers, etc.

4. Do not propose the method in a half-hearted way. If you are convinced that Brand and his followers are in the right, tell your patients that you consider it your duty to use the method. If your patients are like mine, not more than one in twenty will refuse to take the baths.

5. Let your first case be one that you can treat from the beginning and treat accurately and strictly after Brand, so that both the community and yourself will not lose confidence in the method.

6. Follow the directions of Brand, Bouveret, and Vogl as closely as possible, and do not "improve" on the method before having used it for some time.

In my opinion the physician who will use the hydriatric method will find nothing but gratitude on the part of the patient and his friends; in treating typhoid fever he will become acquainted with the useful qualities of water as a remedy, and employ baths in other febrile diseases, such as scarlet fever, measles, pneumonia, etc., and he will thus be worth much more to his patients than he was before using the baths; he will find the hydriatric method not only satisfactory from the humanitarian standpoint, but he will also find it interesting from the standpoint of the scientific observer and physiologist. He will save the lives of some and shorten the sufferings of many.

"The physician, however, who has become convinced of the method and has not the courage to combat all obstacles does not stand on the pinnacle of his profession." (Vogl.)

Brand, Juergensen, Vogl, Glénard, Tripier, and Bouveret have made it so easy for us to carry out the hydriatric treatment that we merely have to follow their directions. And why should we not do so?

The Action of Alcohol on the Circulation.—From a physiologic study of the action of alcohol, GUTNIKOW (*Zeitschrift f. klinische Medicin*, Bd. xxi, H. 1 u. 2, p. 153) concludes that the agent causes lowering of the blood-pressure by lessening the irritability of the vasomotor centers; that it favors the action of the heart; and that it does not influence the vagus.

OBSERVATIONS ON THE ULTIMATE DEFORMITIES OF POTT'S DISEASE: THEIR MODIFICATION AND PREVENTION, WITH SPECIAL REFERENCE TO THE MIDDLE REGION OF THE SPINE.[1]

BY ROYAL WHITMAN, M.D., M.R.C.S.,
ASSISTANT SURGEON TO OUT-PATIENTS AT THE HOSPITAL FOR RUPTURED AND CRIPPLED, NEW YORK.

THE neglected cases at our clinics and the results of similar affections in animals show that, although unaided Nature may overcome disease and finally adapt herself to adverse conditions, she is helpless to directly prevent deformity. This weakness affords the opportunity for the orthopedic surgeon, and although the diseases he treats are often directly or by their complications dangerous to life, his ability and success are estimated not by the survival of the patient, but by the degree of final deformity. The immediate treatment of disease must thus be modified by a foreknowledge of its effects, by the environment of the patient, and the intelligence of those who have charge of him. The balancing of the various factors that affect the life and future usefulness of the patient, the necessity of care and watchfulness through many years, and of moral and physical training to attain the best result, make this speciality one of the most difficult as well as one of the broadest and most humane of all the divisions of medicine.

The most important study, then, for the orthopedic surgeon is that of ultimate results—that we may learn of the direct danger to life from disease, and the complications, and thus come to a clearer understanding of its proper treatment, avoiding on the one hand the needless sacrifice of joints by operations that disregard the final well-being of the patient, and on the other hand correctly judging when the severity of the disease or its complications demand operative interference. By this study we learn that ultimate deformity, often attained after many years, is remarkably constant in its appearance, varying with the severity and duration of the disease, and the function of the joint involved, but dependent on natural laws in its development, the voluntary and involuntary effort to relieve pain, the effect of irritation, tension, or pressure on the growth of bone, the force of gravity, and the final compensation for the change in attitude of the affected part.

If we accept the proposition that unchecked deformity may imply unchecked disease, that Nature not only cannot prevent direct deformity, but by its compensations in the growing child may induce secondary distortions, sometimes as exaggerated and important as the original, it follows that we should at

[1] Read at the meeting of the American Orthopedic Association, in New York, September 20, 1892.

all times endeavor to combat deformity, primary or secondary, which observation has shown to be the ultimate effect of the disease we are treating. Pott's disease differs somewhat from similar affections of other joints, in that early diagnosis is essential for absolute prevention of deformity, as the characteristic deformity resulting from destruction of bone cannot be directly remedied. On the other hand, the number of component joints of the spine that may take on the functions of those destroyed, and the position of the part covered by clothing, render this, when properly treated, a favorable region for an ultimately good result from an esthetic point of view.

The ultimate deformities of Pott's disease vary with the region involved. When the two extremities of the elastic column are affected, the opportunity, so to speak, for deformity is small; it is opposed by the physiologic curves of the spine and is easily compensated for. In the cervical region as favorable factors in treatment are the small size and compact tissue of the vertebræ; the pain and early deformity caused by muscular spasm, which calls attention to the affection; the ease with which the head may be supported in proper position, and the amenability of the patient to bed-treatment, which so quickly relieves the symptoms; in the lower dorsal and in the lumbar region, the accuracy with which the spine may be supported and the attitude of the patient, the body being thrown backward, so that the weight falls behind the weakened point.

In disease of the middle dorsal region all these favorable factors are wanting. The affection is often subacute in character and is not recognized in the early stage. The deformity is favored by the normal posterior curvature of the spine and by the attitude of the patient. The disease is aggravated by the movement of the ribs in respiration, and by the movements of the arms suspended opposite the weakened point; and finally, the compensatory changes in the spine and thorax exaggerate the deformity not only in the presence of active disease, but throughout the growing period.

To illustrate: In middle dorsal disease the attitude is often a drooping, sagging one; the inclination of the body is forward; the kyphosis lies between the shoulder-blades; above this point the spine bends sharply forward until the region of the head is reached; below the projection is a marked lordosis; the upper part of the chest is sunken and flattened, so that the shoulders appear elevated; the sternum is prominent, and the ribs compressed from side to side, changing the shape of the thoracic cavity from an elliptical to a cylindrical form. These characteristic changes, well marked in disease of long standing, are indicated even in cases of slight deformity. The kyphosis exaggerates the lordosis and the lordosis exaggerates the kyphosis. The weakened spine causes deformity of the chest, and the deformity of the chest, with the resulting displacement of the thoracic and abdominal viscera, not only increases the tendency to further deformity, but reacts on the general condition of the patient.

The first impression of the ultimate effect of the deformity of middle dorsal disease is misleading, as the attitude of the patient appears to be one of abnormal erectness, of elevation and squareness of the shoulders. This elevation is apparent only, and due to the sinking of the head and shortening of the neck. As the deformity increases, the scapulæ are separated from one another, and the shoulders are relatively and actually displaced forward, so that a straight line may be passed between the heads of the humeri without touching the chest. Ultimate compensation for deformity relates to the proper position of the head. Normally the weight-line of the body passes through the mastoid process, the center of the hip-joint, to the mediotarsal joint of the foot.

Practically this position is finally attained in disease of any region of the spine, and is attained by compensation for deformity in the line of least resistance, which, in the region under consideration, is below the seat of disease. While the lower spine assumes the position of extreme lordosis, the upper part practically continues the angle of the kyphosis. In other words, there is no true compensation in the sense of antagonizing deformity in the upper segment. Thus, in untreated cases the trunk may become almost triangular in appearance, the head sunken into the base between the shoulders, midway from the projecting sternum in front and the kyphosis behind. We may assume, I think, that if the inferior lordosis or compensation in the region of least resistance were impossible, Nature, in the attempt to bring the head into the normal line, would under favorable circumstances produce a straightening and elevation of the superior portion, as it does in disease of the lower region when compensation below is impossible.

The local deformity of Pott's disease is of slight importance compared with the effect on the spine as a whole. If, for example, the destruction of the body of a vertebra is represented by a V-shaped posterior projection, the actual deformity is measured by the length of its arms or its influence on the unaffected vertebræ. This influence does not depend entirely on the extent or severity of the disease, but rather on the situation, and, although we cannot separate cause and effect in treatment, the prevention of unnecessary deformity in the region under consideration overshadows the importance of the disease, as the ultimate weakness and disability of

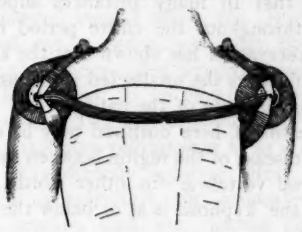
the patient depends upon the deformity, the degree of which is limited, not by Nature, as in the upper and lower segments of the spine, but by the art of the surgeon. The importance of freeing the spine from the influence of local deformity is emphasized by the fact that active disease is usually accompanied by abscess and inflammation of the surrounding soft parts, so that contraction, with final consolidation in the deformed position, may be considered one of the factors in unnecessary deformity. Our efforts should be directed to straightening the entire spine above and below, and thus to limit the kyphosis to the actual extent of disease.

We may now consider how this object may be attained. It may be attained, I believe, by directing our attention to effects as well as to causes. If compensation takes place in the region of least resistance by an exaggeration of the lordosis, this lordosis must be prevented. If the shoulders are displaced forward, overhanging the sunken chest, they must be drawn back to their full limit. If the chest becomes prominent and compressed laterally, this tendency must be restrained. If the head is thrust forward and downward it must be supported, the chin elevated, and the weight thrown backward.

As I wish to call attention particularly to backward traction on the shoulders and restraint of unnecessary motion of the arms, I may explain why I believe this to be an important element in the treatment of disease of the middle region of the spine. In the normal spine, backward traction on the shoulders obliterates the physiologic posterior curvature in the dorsal region, while direct forward motion of the arms increases it. Backward traction makes the chest appear more prominent, but actually diminishes its antero-posterior diameter. Forward movements of the arms act in the opposite way. Thus, backward traction and restraint directly oppose the attitude and approximation to the deformity that is characteristic of the disease under consideration. In addition, it limits voluntary flexion of the spine to the cervical region, while, with the arms free, motion is possible to a much lower point. Backward traction through the clavicles and pectoral muscles tends to raise the upper portion of the chest, and through the serrati muscles to counteract the lateral compression. It assures an increased leverage at the seat of deformity, fixes the spine, and tends to limit the movements of the ribs.

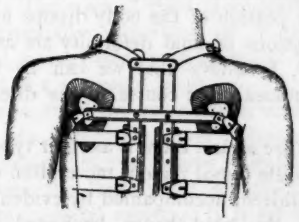
If, in addition, the chin is elevated and supported, we may very effectually oppose the gradual sinking of the upper spine by assuring an habitual attitude of military erectness. The apparatus that I have used has already been described in the *Transactions* of the last meeting. Muscular spasm having been overcome by rest, with extension if necessary, a Taylor back-brace is fitted, the bars being perfectly straight in the lumbar region, assuming that the deformity is moderate in degree. At the fifth dorsal vertebra a cross-bar is placed, terminating in two triangular rubber pads which cover the scapulæ. The brace is then applied, with the aim of drawing the lumbar spine firmly against the back bars. On the front, two saucer-shaped rubber plates cover the

FIG. 1.[1]



prominence of the shoulders, resting on the deltoid muscles, and the heads of the humeri are connected by an unyielding steel bar that passes across the front of the chest. The shoulders are then drawn back to their full limit and the shoulder-plates firmly attached to the neck bars of the brace and the scapular pads behind. While the necessary motion of the arms is not to any extent restricted,

FIG. 2.



the direct forward-reaching movements which tend to increase deformity are entirely prevented.

The straightening of the spine and backward traction on the shoulders bring into relief the forward inclination of the neck and head. On this account I have used a light elliptical steel bar, passing from the brace behind, beneath the chin, with the object of supporting it, and tilting the head backward, to bring the weight of the occipital region into a more favorable position. If this attitude of military erectness can be maintained, the kyphosis is limited to the seat of actual disease, the spine is straightened above and below, and is freed from the deforming influence of the angular projection. In the growing child we may hope by thus changing the pressure to modify the shape of

[1] The photographs illustrate the application of the brace in a case of well-marked deformity in the middle dorsal region.

the unaffected vertebræ so as to conform with the changed conditions, and prevent the gradual increase of general deformity that, in disease of this region of the spine, almost always takes place after apparent cure.

I am on this account very much inclined to doubt the statistics of cure of disease in a certain number of months or years, at least, in the sense of attainment of the best possible result. On the contrary, I believe that in many instances supervision is necessary throughout the entire period of growth, or until observation has shown that the kyphosis in no way influences the unaffected spine, as shown by the habitual attitude of the patient.

The treatment here outlined may be considered proper in disease of the region between the fifth and tenth dorsal vertebræ—in other words, when the center of the kyphosis is at or below the middle of the scapulæ.

A consideration of ultimate deformity shows that such treatment would be manifestly improper in, for example, disease of the third dorsal, when the final result to be expected is an excavation between the shoulder-blades, a flattening of the chest and backward displacement of the shoulders, a deformity quite the opposite of that under consideration. Nor would it be indicated in the lower region, when the inclination of the body is backward, and the lordosis tends to limit the disease; but when the upper portion of the body droops forward and the indications of final deformity are as have been described, I believe that we can by this means directly influence the course of the disease and its results.

As you are aware, there is another type of disease of the middle dorsal region, more often observed in young children, accompanied by evident weakness, in which the head hangs backward or on one shoulder, and the body is supported by the arms; there is the characteristic grunting respiration, the pain and other symptoms that accompany the acute phases of the disease, indicating the necessity for complete relief of the superincumbent weight, by rest on the back.

If, however, middle dorsal disease may act as the cause of deformity through many years of growth, it is evident that bed-treatment can be but a temporary measure, indicated here, as in disease of other joints, by the symptoms.

While absolute rest may not be considered advisable or cannot be enforced, there is a modified form that may be of much importance—that by lengthening the time passed in bed and by periods of rest on the back during the day. The benefits of open air and exercise may thus be assured without injury to the patient, for, as is well known, in weakness or vulnerability of any joint, it is not the temporary activity that is harmful, but long-continued and unrelieved strain.

When the disease is no longer active, massage of the back and abdomen may be employed. The brace may be removed at night and gradually made lighter and more suggestive in character.

I hope that it has been made clear that these remarks apply only to a certain region of the spine, to a selected class of cases, and particularly to a type of disease uncomplicated by great deformity or by acute symptoms; no attempt has been made to consider details of treatment or the management of complications on which ultimate success depends. I shall again call your attention to the principles of treatment by which I believe ultimate and unnecessary deformity may be overcome and avoided: The recognition of the fact that middle dorsal disease, in the sense of producing deformity, may be a factor that operates throughout the growing period; that deformity, direct and compensatory, should be combated from first to last; that attention should be directed to the entire spine and head, in the endeavor to attain a military erectness of attitude that can only be permanently assured by freeing the spine from the influence of local deformity and by developmental changes in the unaffected vertebræ; that backward traction of the shoulders and restraint of unnecessary movements of the arms are important factors in success, and that chin-supports are indicated whenever the inclination of the spine above the seat of disease is forward rather than backward.

These observations are presented as a contribution to the study of the treatment of disease in a region that, if neglected, produces greatest deformity, and in which the least satisfactory results are attained in those who have had the benefit of early and persistent care.

A MATERIALISTIC VIEW OF SEXUAL IMPOTENCE.[1]

BY BRANSFORD LEWIS, M.D.,
OF ST. LOUIS;
LECTURER ON GENITO-URINARY SURGERY AND VENEREAL DISEASES, MISSOURI MEDICAL COLLEGE; CONSULTANT IN GENITO-URINARY SURGERY TO THE MISSOURI PACIFIC HOSPITAL, ST. MARY'S INFIRMARY, THE CITY AND FEMALE HOSPITALS, ST. LOUIS; MEMBER OF THE AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS, ETC.

IT will be acknowledged without argument, I think, that impotence and allied sexual shortcomings are not generally viewed with any degree of precision or unanimity, and are not looked upon in the definite and distinctive manner in which intermittent fever, scarlet fever, locomotor ataxia, etc., are contemplated. Neither are they treated in any definite and purposive way, each physician having

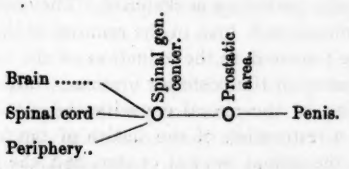
[1] Read before the Mississippi Valley Medical Association, at Cincinnati, October 12, 1892.

his own favorite aphrodisiac formula, which is brought out for each confiding patient who "is beginning to notice a little sexual weakness, a feeling that convinces him that he is not 'as strong' as he was some years ago." It is against this generalized, uncertain, and, in nine cases out of ten, erroneous estimation of this subject, based on lack of thought as to its pathology, that I would inveigh in this paper.

Physiologists teach us that erection—that change in the male organ that is prerequisite to copulation—is brought about by an active increase in the amount of arterial blood flowing into the penis, together with a coincident and abrupt decrease in the amount of venous blood flowing out of it, both serving to gorge the penis and to produce the required rigidity; further, that the influences that stimulate this active arterial inflow and sluggish venous outflow come to these respective vessels from the erigent nerves of the spinal genital center, situated in the sacral region of the spinal cord. Tracing these physiologic sequences still further back, we learn that such a nervous influence which goes out from the spinal genital center originates in one of three different localities of the organism: first, in the brain; second, in the spinal cord; or third, at some part of the periphery. Familiar illustrations of these three sources as originating centers of erigent influence are seen (1) in the man who gets an erection from looking at an obscene picture, in which case the originating impression is in the brain; (2) a painter falls from a house, sustains an injury to his spinal cord, and has a constant erection—priapism—for a week or a month thereafter; (3) the masturbator arouses his erections by friction of the penis, scrotum, or anus.

So, therefore, there are three sources of origin for erection, and, conversely, if either of these three sources becomes diseased, the organism is liable to lose that one as an erigent center. If the conducting mechanism becomes disordered, of course, the same effect is liable to ensue.

Therefore, diagrammatically, we might express the physiology of erection thus:



Our aim should, then, be to study the conditions that produce disorder of any one of these four parts of the economy.

To my mind the most rational and convenient classification of the several varieties of male impotence is that of organic, psychic, and symptomatic, according as the impotence is due to organic defect of the penis, to deleterious psychic influence, or to some diseased condition or agency acting on the organism. The present paper shall be confined to a discussion of the last variety.

That lack of sexual desire and capacity may result from such debilitating and depressing influences as loss of general health from any cause, such as tuberculosis, diabetes, fatigue from exhausting work, prolonged mental effort, etc., is readily admitted and easily understood; the physical and nervous forces are expended through these channels, and little force is left to be expended through the sexual channel. The lack of sexual vigor attributed to the deep-thinking philosopher is, as it should be, classical. The directly sedative effect of certain drugs, such as morphine, the bromides, lupulin, antimony, arsenic, lead, etc., should come under this head—symptomatic; the impotence that these agents sometimes produce is symptomatic of their effect.

There is yet to be mentioned a set of causes that have a more direct connection with impotence than any so far mentioned; that are more commonly overlooked; the elucidation of which, in fact, is one of the chief objects of this discussion. I refer to such causes as masturbation, excessive sexual indulgence, chronic gonorrhea, and other genital affections. The *mode* of their production of impotence is especially important, as if that is not understood, a case having such an origin can hardly be brought to a successful issue.

In order to trace the connection between these affections and impotence, it is necessary to state that the prostatic urethra is now recognized as the sensitive area, the focal point of nervous impressions on the genital system. It is the seat of the pleasurable sensations in the crisis of intercourse. In this act the prostatic area is intensely congested and its nerves are at a high state of tension. It is, moreover, a kind of way-station, a junction for all of the nerve-telegraph lines connecting the various parts of the uro-genital system with one another; and, consequently, it bears the brunt of the injurious nervous impressions reflected from these various parts. If there is chronic irritation in the anterior urethra, from stricture located there, irritation from it is liable to be reflected back to this sensitive prostatic area. If there is excessive sexual intercourse, or repeated masturbation, or persistent sexual excitement (ungratified, perhaps), just so often is there intense vascular and nervous excitement of this area, with possible ejaculatory convulsion. Naturally, under such circumstances we would look for disorder and disease of this area, and if we examine the part through an endoscope

we shall find evidences of such disease in the deep congestion of the mucous membrane, in its acute sensitiveness to contact with an instrument, in the secretion of pus there, in the frequency with which the patient urinates, etc. These are demonstrable physical effects, showing the injury done this prostatic area by the abuse heaped on the genital system in the several ways mentioned. Chronic gonorrhea of the posterior urethra will also result in inflammation of the prostatic area.

Now, when we know that disease of this prostatic urethra is, in turn, capable of so deranging the spinal genital center as to deprive it of its power of sending out the nervous influence inciting erections—that is, that disease of the prostatic area is capable of depriving a man of his virility—then the key to impotence from these disorders and habits is at once furnished us, and the paths for appropriate treatment are also supplied.

The pathologic sequences are therefore these: Gonorrhea, masturbation, excessive sexual indulgence, organic stricture, narrow meatus, adherent prepuce—*anything* of the kind—through the close nervous relationship existing, arouses disease of the prostatic urethra; this, in turn, deranges the spinal genital center, interfering with its control over erections; impotence is the result.

A plan for therapeutic action is equally as plain: First, to remove the habit or the disease that is responsible for the inflamed posterior urethra; then to remedy that posterior inflammation, and in that way restore the health of the genital or erectile center in the spinal cord.

It so happens that disease of the prostatic area deranges the spinal genital center so as to arouse impotence in two very different ways: by causing either increased excitability of that center, or abolished excitability of that center. In the first case, the person begins the act of intercourse, but the genital center is so highly excitable that there is ejaculation before penetration can take place, and copulation is defeated. This is *relative* impotence. In the second case, because of entire lack of excitability of the genital center, no erection is aroused at all, and *absolute* impotence may be the result. Cases in illustration of both of these forms might be detailed, but for lack of time I shall not do this.

The distinction between impotence and hyperexcitability on the one hand, and abolished excitability on the other, should be rigidly maintained, as in treatment it acts as a guide as to whether we should attempt to arouse the dormant function of sexual excitability, or allay the exaggerated excitability of a too highly-strung genital organism. I believe that it is from the failure to make these fundamental pathologic distinctions that we notice such wide variance and reckless empiricism in the treatment of this affection. For instance, there is reason for surprise when we read the diametrically opposed views of such authorities as Gross and Howe as to the propriety of giving potassium bromide in cases of symptomatic impotence. Gross strongly advises the employment of the remedy, "since the parts are to be kept still further at rest by the administration of agents which diminish reflex excitability of the cord, and suspend sexual desires and the power of erection." But in speaking on the same subject, Howe says: "I have no hesitation in saying that the administration of bromides in spermatorrhea and impotence is the source of incalculable injury to the patient."

With a pathologic basis and rational distinctions such as I have given, we are furnished with guiding principles; also, with the local measures properly applicable in different cases of impotence; and, from what has gone before, it certainly would seem that the agents most commonly in vogue, and most promptly prescribed for such patients, viz., aphrodisiacs, are not only least beneficial, but are most harmful; for we have learned that impotence, when arising from genital disturbance, such as masturbation, etc., is the product of inflammation of the posterior urethra; and we know that the manner in which aphrodisiacs cause sexual excitement is by causing congestion of the sexual organs. Hence, if we prescribe them under those circumstances, we are simply adding fuel to the flame by increasing the inflammatory congestion that is already doing the damage. The better plan would therefore be to employ measures that would allay congestion and inflammation of the posterior urethra, and thus restore its *health* and functioning capacity rather than goad it with unnatural stimulants into unnatural activity. The need of a rational mode of treatment, in contradistinction to the empirical modes usually in vogue, is, consequently, readily apparent.

In the present paper I could, of course, hardly go into the details of the treatment of such cases. Their principles are embodied and partly indicated in the pathology as sketched. They consist, as already mentioned, first, in the removal of the exciting cause; second, in the reduction of the localized inflammation of the posterior urethra; third, in the restoration of the sexual capacity and inclination, through a restoration of the health of the prostatic urethra, the spinal genital center, and the general health of the patient.

The subject of removal of the cause need not take time for discussion.

The treatment of the inflamed posterior urethra, I think, is best accomplished by the use of two series of procedures—irrigation of the entire urethra (an-

terior and posterior), with progressively increasing strengths of zinc-sulphate solutions, and, later, the injection of the entire urethra with progressively increasing strengths of silver-nitrate solutions. The zinc irrigation is performed, after the patient has urinated, by introducing a small-sized, soft rubber catheter well into the posterior urethra, and then injecting from a large syringe a half-pint of the solution; on withdrawing the catheter, the patient passes out the solution, thus obtaining another and complete irrigation of his urethra. This is done, at first, every other day; later, with intervals of two or three days between treatments. The strength is gradually increased from ½ to 3 or 4 per cent. This is a preparatory measure for educating the urethra for the second series in the treatment, which is practised with the deep urethral syringe of Ultzmann or Keyes. The patient having urinated, the syringe is filled with a ¼ per cent. silver-nitrate solution; the catheter-stem is lubricated with glycerin (oil would prevent contact of the medicine with the membrane), and introduced until its end reaches the posterior urethra, denoted by the syringe presenting an angle of forty-five degrees with the patient's body. The solution is then injected as the instrument is withdrawn.

The first of these injections should not be stronger than ¼ per cent., so that the sensibility of the patient may be tested; this varies very considerably in different persons. The injections are at first given with two or three days' intervals, which are gradually lengthened as the strength of the solution is increased. I seldom use a stronger solution than one of 3½ or 4 per cent. If these measures fail, we may have recourse to the endoscope, cold steel sounds, the psychrophor, perineal douches, etc., which are all good in certain cases.

Systemic tonics are frequently indicated. If there is a tendency to hyperesthesia, continued irritability, etc., of the prostatic urethra, I should, perhaps, advise the use of the bromides; while if the opposite condition existed, abolished irritability or excitability of that region, I should not prescribe them. Aphrodisiacs, instead of being the first, should be the last of the medical armamentarium brought to bear on the case. I believe that the field for their use in such cases is indeed very limited; that their only application could be in case the several restorative measures mentioned had accomplished the ends desired, the health of the parts had been reëstablished, and yet excitability had not returned; then it *might* be proper to stimulate the latent sexual function with some of the aphrodisiacs, such as phosphorus, cantharides, damiana, etc. These might then manifest a beneficial effect in a way that was not expected of them—that is, if there were any psychic element in the case, they might stimulate to one pretty good erection, which would have the moral influence of restoring the confidence of a timid patient.

1006 OLIVE STREET.

HEIDENHAIN'S MODIFIED MICRO-TECHNICAL METHODS AND THEIR ADVANTAGES FOR THE PHYSICIAN.

BY A. P. OHLMACHER, M.D.,
PROFESSOR OF EMBRYOLOGY AND BIOLOGY, COLLEGE OF PHYSICIANS AND SURGEONS, CHICAGO.

IMPROVEMENTS in the methods of microscopic research have become so numerous that it confuses one to keep abreast of them. Scarcely is a method or formula proposed ere it is modified, extended, or superseded. The technique of the last year is becoming old; and in all this maze of new processes the carmine and hematoxylin microscopist of ten years ago is at sea.

About ten years ago Flemming gave a summary of his wonderful studies of the nucleus, and in this work (*Zellsubstanz, Kern- und Zelltheilung*, Leipzig, 1882, pp. 379–384) he describes the precise technical methods which he devised, and by the aid of which he was able to make his remarkable contributions to the study of cell-anatomy. Flemming's work inaugurated a new era, the results of which are attested to the present time by the advances in our knowledge of nuclear division, of fertilization of the ovum, etc., results which are felt in every department of biologic science.

Of all methods proposed for the accurate study of animal tissue, whether normal or pathologic, that devised by Flemming, and since improved by him, must remain as a foundation. As described by Arthur Bolles Lee, in his valuable little handbook (*The Microtomist's Vade Mecum*, A. B. Lee, second edition, London, 1890), under the head of the "general method," the modified Flemming's method becomes easily available for every laboratory student. The steps of this process consist in *fixing* the *perfectly fresh* tissue in Flemming's chromo-aceto-osmic acid mixture, *dehydrating* in alcohol, *clearing* in cedar-wood oil, *imbedding* in paraffin, *fixing sections on the slide* by Mayer's albumin fixative, and *staining* with gentian-violet, safranin, or some other dye. That this procedure is highly serviceable in the laboratory, and that in the hands of experienced manipulators its results leave little to be desired, must be the verdict of everyone who has mastered its details. But the method is not free from objections, and in private work or in inexperienced hands it has been found most difficult. The objections to the method may be considered in detail, with regard to the fixing solution: 1. It is difficult to prepare. 2. It does not keep well, and must be stored in glass-stoppered bottles. 3. The

osmic acid required is not easily obtained outside of the large cities, and is expensive. 4. It will penetrate only small pieces of tissue. 5. It decomposes in the presence of fat-containing tissue, and blackens this tissue to such a degree as to hinder further study. 6. It must always be freshly prepared, cannot be used a second time, and cannot be made extemporaneously.

It is evident that most of these objections would occur in the work of the student removed from the resources of a well-equipped laboratory.

The country practitioner would have difficulty in overcoming many of these disadvantages.

As regards the cedar-wood oil clearing method, the results are most perfect, providing *pure* cedar-wood oil can be obtained; but in the writer's experience, the proper cedar-wood oil recommended by Lee (*loc. cit.*, p. 142) is obtained with great difficulty in this country.

Fixing sections on the slide previously to staining, after the directions of Mayer, while an advance of much utility in the process of aniline-staining, nevertheless has the disadvantage that the film of coagulated albumin often interferes with the best penetration of the staining agent, and often retains some of the color, constituting a source of possible confusion as to the appearance of a section. This is particularly true when contrast stains are used in producing the so-called "double stains," the second stain invariably being retained by the albumin. Another source of trouble with the albumin fixative lies in the difficulty with which wrinkles are removed from thin sections after being placed on the slide.

Among the various substitutes for the Flemming method, probably the most valuable contribution is that of M. Heidenhain, recently set forth in detail (*Ueber Kern und Protoplasma.* Festschrift, Albert von Koelliker, Leipzig, 1892). The process proposed by Heidenhain consists of the following steps preparatory to section-cutting: fixing in corrosive sublimate, dehydrating in alcohol, clearing in bergamot oil, and imbedding in paraffin. After the sections are cut they are fixed on the slide by Gulland's water method, and then subjected to a special washing process, by which the excess of sublimate is removed.

The fixing solution is made by saturating a ½ per cent. solution of common salt in distilled water with corrosive sublimate, heat being employed to aid the solution. It is intended that the solution shall be super-saturated with the sublimate, and for this end an excess of powdered sublimate should be kept at the bottom of the bottle holding the stock solution. Pieces of tissue are cut into cubes not larger than three-eighths of an inch in dimensions, immediately after removal from the living subject, and dropped in some of this solution. From a half-hour's to an hour's immersion is sufficient for perfect fixation, when the object is brought directly into 95 per cent. alcohol. In a couple of hours the alcohol may be replaced by fresh alcohol of the same strength. After twenty-four hours the tissue is ready for clearing; or it may remain in the alcohol until required for use.

For clearing, we remove our object to pure bergamot oil (Heidenhain specifies that the oil should have a well-marked green color), in which it remains for from two to twenty-four hours, according to its size. The cleared object is now removed to a bath of equal parts of soft paraffin and bergamot oil, kept at the melting-point, then removed to paraffin of which the melting-point is 45° C. (for from one hour to two hours), then to paraffin that melts at 58° C. (for from one hour to two hours). The final imbedding is made in paraffin that melts at 58° C. Thin sections are now cut with the microtome.

The water method of fixing sections on the slide as originated by Gulland (*Journal of Anatomy ana Physiology*, xxvi, vol. vi, part i, 1891) is carried out by removing the ribbon of sections to a vessel of water, of which the temperature is somewhat below the melting-point of the paraffin with which the sections are infiltrated. On coming to the surface of the water the sections flatten perfectly, and a clean slide may be cautiously immersed under the sections, which are guided to the proper point by a camel's-hair brush, after which the requisite number of sections are cut from the ribbon and the slide is carefully lifted from the dish of water. The excess of water is allowed to drain away; the slide is placed in a warm oven, of which the temperature is kept just below the melting-point of the paraffin, and here the slide remains until all the water has evaporated. The paraffin may now be carefully melted, and the sections will be found securely fixed to the slide.

It is evident to anyone who has practised Gulland's excellent method that great difficulty exists in preventing the sections from assuming an improper position on the slide as it is lifted from the dish of water—this being particularly true when single sections are manipulated. Heidenhain's modification of the water-fixing method is as simple as it is ingenious and valuable. He moistens the surface of a clean slide with a clean rag which has been dampened with distilled water. A drop of water is now brought to the center of the slide, over the surface to be occupied by the section; the slide is then removed to a clean copper plate, which lies on the surface of a warming-oven or water-bath. The temperature to which the copper plate is to be raised should be slightly below the melting-point of the paraffin employed in imbedding. When the slide, with its drop of water, has been warmed, the section

is placed in position on the drop of water, where it at once flattens perfectly. The excess of water is removed by a piece of blotting-paper, and the slide remains on the warming-plate until the water has evaporated (for from two to twenty-four hours). Now the paraffin surrounding the section is cautiously melted and the section is fixed to the slide.

The advantages of this procedure over any method in which an adhesive mixture is employed in fixing the section are obvious, and a little practice will convince anyone of its extreme usefulness.

For removing the paraffin adhering to the slide about the section, Heidenhain, in common with most German microtomists, employs xylol, but for practical purposes ordinary benzine will be found to answer perfectly. The slide is plunged into a jar of benzine and allowed to remain a few minutes, when it is removed to another jar of 95 per cent. alcohol. The alcohol-bath is prolonged to from an hour and a half to six hours, after which the section is ready to have the excess of corrosive sublimate washed out.

All microtomists who have employed sublimate as a fixing agent have noted the crystals of the salt which remain in the completed specimens, and thus far no infallible method has been devised for obviating this difficulty. Heidenhain's method, however, fulfils all the indications, and by its aid the great drawback to sublimate fixation is removed.

After the bath in alcohol, Heidenhain treats the sections with pure tincture of iodine (the *U. S. P.* tincture is a proper strength). The tincture is allowed to act for about fifteen minutes. A shorter time has been found sufficient, however, in our experience, when very thin sections are being prepared. After the iodine treatment the section is washed with 95 per cent. alcohol to remove the excess of the iodine, and then the slide is transferred to a jar of 95 per cent. alcohol to remain till no more iodine dissolves out of the section.

This treatment removes with absolute certainty all crystals of sublimate; and, as Heidenhain states, it does not appear to interfere with any subsequent staining method.

Now that the section is free of the troublesome sublimate crystals, it may be stained with any of the vegetable dyes or with any anilin coloring reagent, as the requirements of the case dictate. We have found only one staining agent which failed to give the same results as in tissue fixed in Flemming's solution, viz., safranin—the resulting stain being here more faint and less precise. With gentian-violet and eosin the results are exceedingly beautiful.

In the particular studies in which he was engaged, Heidenhain employed hematoxylin and the Biondi-Ehrlich triple stain as coloring agents, and for which he proposes some very valuable modifications and directions. It is not the purpose of this communication to consider the subject of staining. Suffice it to say that with the section prepared as described the worker may stain with any agent and for any purpose desired.

Concerning the advantages of the methods proposed by Heidenhain, it will be apparent that they are peculiarly applicable to the work of the medical man.

Since the crystal-formation of corrosive sublimate has been overcome, it offers a variety of desirable features as the fixing agent for general use. 1. It is cheap and readily obtained everywhere. 2. In an emergency an extemporaneous solution could be prepared by dissolving the surgeon's corrosive sublimate tablets to saturation in water. 3. The solution made as described is stable, and may be repeatedly employed for fixing, without deterioration, though on account of its cheapness there would be no particular object to economize in this manner. 4. It is not injured by exposure to light, and may be kept in cork-stoppered bottles. 5. It penetrates better than Flemming's solution, so that pieces of the size of three-eighths of a cubic inch may be fixed in it. 6. It does not blacken fat-containing tissue.

There are two disadvantages in the sublimate fixing solution: it is instantly spoiled by contact with metallic substances; and tissue fixed in it becomes brittle if kept long in alcohol (Lee, *loc. cit.*, p. 32). Wooden tooth-picks, quills, glass rods, etc., may be employed in transferring the objects to and from the solution, thus avoiding contact with metal instruments. To prevent the tissue becoming brittle all that is necessary is to imbed it early, for no more perfect method of preserving microscopic objects can be desired than having them sealed in a block of paraffin.

For the purposes of medical men removed from laboratories, the sublimate method of fixing tissue offers many inducements. The surgeon can carry with him to the operation an ounce of the fixing fluid, and as soon as the tissue is removed it may be cut in small pieces, which are dropped in the bottle of sublimate solution. At the end of one or two hours the pieces are removed to a bottle containing 95 per cent. alcohol, where they may remain until they are sent to a pathologist for examination.

Were the foregoing very simple procedure universally adopted by surgeons a vast quantity of valuable material would be saved which now goes to waste. Many questions in pathology await solution which can only be obtained by the accurate examination of a large amount of perfectly fixed tissue; and to further this solving of present difficult points every practitioner of medicine who uses the scalpel

may contribute, if he will but adopt a precise method of fixing and preserving the specimens obtained in his work. Not only this, but an accurate diagnosis of tissue is often hindered by faulty preservation of the specimens. What pathologist has not been wrung with anguish to find some specimen of great value lost to him because it was macerated, or even decomposed by immersion in weak alcohol?

Let Flemming's solution or sublimate solution be properly employed by the physicians of this country, and our scientific students will contribute their share with the European investigators in the many absorbing problems of the day.

GENERAL REPORT OF AN EXAMINATION OF 415 YOUNG DEAF-MUTES, IN REGARD TO THE NASAL CHAMBERS, EARS, AND ORGANS OF PHONATION.

BY ARTHUR AMES BLISS, M.D.,

LARYNGOLOGIST TO THE GERMAN HOSPITAL; SURGEON TO THE THROAT, NOSE, AND EAR DEPARTMENT OF ST. CLEMENT'S HOSPITAL, PHILADELPHIA.

DURING the past year I made a careful examination of the aural, throat, and nasal conditions of 415 deaf-mute children, inmates of the Pennsylvania Institution for the Education of the Deaf and Dumb.

The cases thus examined may be divided into three groups, the first being the pupils of the sign department, whose education has been conducted entirely by means of the "sign language," and with whom there has been no attempt made at oral training. Of the 415 pupils examined, 303 belong to this group of "signers." Group 2 is composed of pupils of the oral department, whose training is strictly oral, the aim being to enable the pupil to use and understand verbal language. Of the total number examined, 91 pupils belong to this group of "orals." Group 3 is made up of pupils who have been given a trial in the oral department, but, failing to succeed in this system, have been sent to the sign department, the attempt at oral training being abandoned. Of the 415 pupils 21 belong to this group of *oral failures*.

In considering the general results of examinations, only decided pathologic conditions will be considered in this paper. The detailed account of each case will be prepared and published at a later date. The mere enumeration of lesions is of general interest, but, to estimate the importance of such lesions in their influence on the training and education of the pupil, the reader must know what relations these bear to all the parts involved in phonation. In short, the report of conditions found in the nose, post-nares, pharynx, tongue, palate, tonsils, larynx, and ears, in each individual pupil, must be tabulated and put in form for easy reference. This will be done at a future date.

	Group 1.	Group 2.	Group 3	Total
NARES.				
Deformities, consisting of deviated septa, exostoses, hypertrophied turbinals, causing partial or complete occlusion of one or both nares	65	14	4	83
Posterior hypertrophies of turbinals	21	1	2	24
Impactions of middle turbinals against the septum	14	3	0	17
Synechial bands between the septum and lower turbinals	2	2	0	4
Sclerosis of mucous membrane in the anterior nares	35	7	5	47
Sclerosis in posterior nares	13	8	0	21
Atrophy of nasal mucous membrane	20	2	0	22
General catarrhal condition due to vasomotor paresis without deformities	13	3	0	16
Adenoids in vault of pharynx, causing partial occlusion of this space or pressure upon the Eustachian openings	57	14	8[4]	79
TONGUE.				
The frenum was abnormally short	24	0	1	25
Hypertrophy of the lingual tonsil worthy of note	12[1]	1	0	13
PALATE.				
Abnormally high, narrow, and gothic-arched	8	0	2	10
Deflection of raphé from median line, most frequently to left side	6	0	0	6
Double uvula	2	0	0	2
Relaxed and pendulous soft palate	2	0	0	2
TONSILS.				
Large tonsils which filled the spaces between the faucial pillars of their own sides of the throat, but were not adherent to these bands, or did not cause serious occlusion or pressure upon surrounding parts	32	16	1	49
Tonsils greatly hypertrophied, diseased, and causing pressure upon palate or tongue, and greatly occluding the faucial space	18	5	4	27
Adhesion between tonsil and faucial pillars, the tonsil being encapsulated	30	6	5	41
Narrowing of fauces by broad posterior pillars with high attachment to the pharyngeal walls	11	0	0	11
PHARYNX.				
Simple hypertrophy of mucous follicles	23	3	2	28
Sclerosis of mucous membrane with follicular hypertrophy	9	6	0	15
Simple sclerosis of mucous membrane	55	20	5	80
Atrophy of mucous membrane	8	1	1	10
Venous engorgement worthy of note	22	2	3	27
LARYNX.				
Epiglottis abnormally depressed	14[2]	2	0	16
"Infantile" epiglottis	2[3]	0	0	2
VOCAL BANDS.				
Apparently normal in color and ordinary movement	83	63	12	158

[1] Six of these were in pupils between 14 and 22 years old; the other six in pupils under fourteen years of age.

[2] Only four being in pupils under fourteen years of age.

[3] Both being in pupils over fourteen years of age.

[4] These eight cases all occurred in subjects between twelve and nineteen years old.

Most of the pupils of group 1 presented vocal bands of a dull-gray color, bowing or wavy at their free margins, or so thin and narrow as to be unusually obscured by the ventricular bands. Efforts at phonation showed the adducting muscles to be weak and inefficient.

EARS.

The limits of this paper will not permit of more than a general enumeration of gross lesions. The majority of pupils presented drum-heads that were retracted, dull in color, and feebly movable. These will not be noted here, but only such cases of plastic otitis media as displayed adhesion of the drum-head, in whole or in part, or other destructive process. It is left for the detailed report to give the aural condition in each individual pupil.

	Group 1.	Group 2.	Group 3.	Total.
Plastic otitis media, limited as already explained	75	20	16	111
Adherent and immovable drum-heads	94	28	3	125
Very feebly movable drum-heads	43	12	4	59
Atrophic drum-heads	2	0	0	2
Engorgement of manubrial vessels and pinkish tint of drum-head	6	3	1	10
Calcareous deposits in drum-head	14	2	0	16
Double perforations with otorrhea	9	5	3	17
Single perforations with otorrhea	10	5	1	16
Cicatrized perforations, many of them covered with new membrane	32	13	3	48
Double impactions of cerumen	14	5	0	19
Single impactions of cerumen	15	7	2	24
Atresia of external auditory meatus	2	0	0	2
Undeveloped auricles with absence of auditory meatus	1	0	0	1
Foreign bodies	6[1]	0	0	6
Desquamative otitis externa	4	0	0	4
HEARING.				
A slight trace of hearing	6	17	2	25
On contact only	62	6	10	78
Fair hearing	0	2	0	2

PERSONAL AND FAMILY HISTORY.

Origin of Deaf-mutism.	Group 1.	Group 2.	Group 3	Total.
(*a*) From birth	105	22	10	137
(*b*) Acquired	178	65	11	254
(*c*) Uncertain	20	4	0	24

Causes of deaf-mutism given without the division in separate groups:

	Cases.
Spotted fever	43
Scarlet fever	66
Measles	17
Meningitis	29
Typhoid fever	5
Pneumonia	2
Diphtheria	2
Malaria	2
Smallpox	1
"Colds"	13
Convulsions	10
Black fever	3
Traumatism	9
Spinal meningitis	5
Inflammation of bowels	2
Cholera infantum	1
Shock	1
Mumps	1
Bronchitis	1
Catarrhal fever	1
Sunstroke	1
Otitis media	9
Whooping-cough	2
Teething	3
Croup	1
Eczema	1
Unknown (exclusive of 137 pupils credited as being deaf-mutes from birth)	49

[1] Consisted of cotton, stick of wood, paper, and a piece of tin, all showing evidence of having been in the ears for a long time.

HEREDITY.

The parents were relatives in 24 cases; deaf-mutes in 7. Pupils possessing other deaf-mute relatives, 94.

I would again call the reader's attention to the numbers composing each group: Group 1 (the sign-language pupils) being 303, Group 2 (the oral pupils) being 91, and Group 3 (the *oral failures*) being 21 in number.

Especial attention is called to these *oral failures*, and by glancing at the figures it will be observed that, in abnormalities of the post-nasal space, pharynx, and tonsils, this group is particularly rich. The difficulties for a deaf-mute, under the best circumstances, to acquire verbal language are sufficiently great to make a successful result seem almost like a miracle. With a post-nasal space stuffed by enlarged adenoids, the choanæ further occluded by posterior enlargement of the lower turbinated bodies, the tonsils so hypertrophied as to press upon the soft palate and tongue, and to greatly lessen the caliber of the fauces, it is not surprising that the would-be deaf-mute speaker should become one of the army of "oral failures." I think that if these statistics show nothing else, they indicate the need for careful inspection of the entire vocal apparatus in all deaf-mutes entering upon oral training. They also show the necessity for such judicious treatment as will place the vocal apparatus of the pupil in the best condition for the various parts to perform their functions. I believe that many deaf-mute children have failed as oral pupils, or have not attained a satisfactory degree of ability in phonation, not because of mental inaptitude, or of neglect upon the part of their teachers, but purely because of anatomic defects that might have been corrected.

The large number of pupils showing the existence of plastic otitis media, but still having some sense of hearing by bone-conduction, suggests the possibility of benefit from modern operative methods.

The same suggestion would apply to cases of acquired deaf-mutism, in which bone-conduction was fairly good, and the lesion distinctly a sclerosis of the middle ear or a necrotic process. These procedures would consist of excision of the useless drum-head with the malleus, now acting as obstructors to instead of conductors of vibrations, or of Urbantschitsch's or Miot's method of mobilization. Certainly, in a limited number of cases, it would be quite justifiable to perform the preliminary operation of making an ample perforation in the drum-head, and then be guided in regard to farther procedures by the results thus obtained.

The reader must not be misled into exaggerating the importance of certain data given in this report. I would refer, in this connection, chiefly to the subject of sclerosis of the pharyngeal mucous membrane. This appears as a very common condition in normal subjects, who are never conscious of any inconvenience therefrom. It is the degree of sclerosis in which the process borders upon true atrophy that renders it worthy of notice. However, it indicates the result of inflammation or malnutrition, and appears to me to be more advanced among the cases reported here than among normal children of the same age.

This report may serve as a partial answer to the question so often asked, why certain deaf-mutes, of average mental capacity, either fail completely as speakers. or make sounds almost unintelligible, except to those long associated with them. In many instances, the causes may lie hidden deeply in some atrophied cerebral center, but it should certainly encourage the oral teacher to know that, in other cases—and, perhaps, a large proportion, too—the causes of failure are mechanical and within easy reach.

CLINICAL MEMORANDUM.

URTICARIA AFTER THE ADMINISTRATION OF PIPERAZINE.

BY T. HEWSON BRADFORD, M.D.,
GYNECOLOGIST TO THE OUT-PATIENT DEPARTMENT OF THE PENNSYLVANIA AND HOWARD HOSPITALS, PHILADELPHIA.

THE merits of piperazine as a uric acid solvent, and its influence upon the uric-acid diathesis have attracted considerable attention in the profession. Its easy mode of administration is a great boon to those patients who have been compelled to take for any length of time colchicum, potassium iodide, lithium and sodium carbonates, etc. Although it has been strongly advocated as being perfectly harmless, yet its administration is not entirely free from unpleasant results, as will be seen in the notes of the case to be reported.

On the 9th of September, 1892, I was consulted by Miss I., seventy years old, for a painful swelling of the right knee, which she attributed to rheumatism, but which on account of family peculiarities and her nervous temperament I diagnosticated as gout.

Having treated her on several occasions for digestive disturbances, I decided not to give her colchicum, but prescribed phenacetin and salol, and topic applications. These not relieving the trouble, I gave

℞.—Piperazin. . . . . gr. lxiv.
Aquæ destil. . . . . f ℥iv.—M.

S.—One teaspoonful in half a glass of soda-water, at 9 and 11 A.M.; 3, 5, 7, and 9 P.M., and on retiring; thus in the course of the day fourteen grains of piperazine.

The treatment proved very acceptable to the patient, agreed with the digestion, and was followed by marked improvement.

On the sixth day of the administration of the medicine the patient complained of an annoying burning and itching of the skin, which proved to be dependent upon urticaria.

Previous to this occurrence her skin had always been singularly free from eruptions of all kind, and the inference was that the medicine administered gave rise to the trouble.

Piperazine has been highly recommended as a remedy for pruritus in gouty or rheumatic patients.

Dr. William S. Disbrow, in *Notes on New Remedies*, March, 1892, says "that it affords great relief from those itching symptoms which are generally termed pruritus, whether occurring alone or with rheumatic or gouty pains."

In my case there never had been any evidence of pruritus, although the woman was of a marked gouty diathesis.

Careful attention was given to her diet, and there was no gastric disturbance; in every respect the medicine agreed with her, with the exception of the cutaneous trouble which, while annoying, was not attended with any dangerous symptoms.

I may add that the gout entirely disappeared and to the present time there has been no return.

125 SOUTH EIGHTEENTH STREET.

NEW INSTRUMENT.

NEW INSTRUMENT FOR THE CURE OF HERNIA.

BY ALEXANDER DALLAS, M.D.,
OF NEW YORK.

THE treatment of hernia is still so unsatisfactory that any means that will simplify the process and improve the results must prove of interest to the profession. The new instrument devised by me for this purpose is applicable in inguinal and femoral herniæ (which form 90 per cent. of all the cases), and its simplicity and efficiency will prove its own indorsement. As shown in the accompanying cut, it consists of a head and shaft or handle. The head is flattened, and its point smooth and blunted. Its anterior and posterior surfaces and outer edge are covered with fine, needle-pointed serrations, while its inner edge is smooth and occupied by a deep groove. The cover of the shaft is movable, and, while the instrument is being introduced, is pushed forward so as to cover completely all the serrations and present a perfectly smooth, rounded surface. By removing the

end screw, the instrument can be taken apart and easily cleansed.

Method of using. The patient is placed on his back, with the pelvis elevated; the parts are thoroughly cleansed in the usual way, and local anesthesia is produced by the injection of a 4 per cent. cocaine-solution.

A transverse incision, one inch long, is then made through the integument, the subcutaneous tissue separated, the cord gently lifted to the inner side, and the instrument introduced with the groove embracing the cord. It is slowly insinuated along the canal until its end is felt free in the abdominal cavity; the cover is then drawn back, exposing the serrations, and the instrument is carefully withdrawn, abrading and freshening, in its withdrawal, the whole interior surface of the canal, except the narrow portion where the cord lies, which is protected by the groove. During withdrawal, also, the fingers are pressed over the canal to prevent unnecessary effusion of blood. The external wound is at once firmly sealed with iodoform collodion; a firm compress is applied to keep the walls of the canal in apposition, and is kept in place by adhesive plaster and

a spica bandage. There is no reaction, and the operation is devoid of danger. In two or three days firm agglutination has taken place, and the canal is obliterated. A light truss with a grooved pad (described elsewhere) is then applied, and the patient allowed to go about. The truss can be discarded in one or two months, when the parts have acquired sufficient strength.

To attain the best results four things are essential: 1, perfect asepsis; 2, an instrument large enough to slightly distend the canal; 3, the avoidance of unnecessary effusion of blood; 4, the use of a grooved pad which will give efficient support without undue pressure over the canal.

Indications. It can be used in all cases of congenital inguinal hernia, even of long standing; in all "recent" cases of acquired inguinal and femoral herniæ, or even in cases that have lasted some time when the normal contour of the canal still persists. It will thus be seen that its field of usefulness is very wide. Unlike the Heaton and the Schwaller methods, it is not painful, while its mode of application is exact, and its results prompt and definite. By its use truss-treatment can be largely dispensed with, and the operation for the "radical cure," with its dangers and uncertainties, can be limited to cases of long-standing associated with adhesions or other complications.

The instrument is made by Tiemann & Co., whom I have to thank for their courtesy and promptness in carrying out my ideas. In the instrument for femoral hernia the handle is suitably curved and the groove for the femoral vein is slightly wider and more shallow, while, in the after-treatment, the leg is kept well flexed, so as to permit of the better approximation of the walls of the canal.

MEDICAL PROGRESS.

Ectopic Pregnancy.—Based upon 56 personal observations, MARTIN (*Centralbl. f. Gynäkologie*, 1892, No. 39, p. 771), at the recent International Gynecological Congress, discussed the subject of ectopic pregnancy. Etiologically he expressed the view that in most cases the ovum meets with a mechanical obstruction, though this is not always demonstrable. Ovarian insertion must be admitted, though relatively rare. The most common seat of lodgment of the ovum is in the tube, and especially in the ampulla (49 cases of 55). Of 55 cases of tubal pregnancy the ovum occupied the right side in 34, the left side in 22. Soon after the lodgment of the ovum a tubal decidua of irregular formation develops; complete enclosure of the ovum seems never to take place. The tubal serotina is a less homogeneous membrane than the uterine serotina. Investigation has not been able to determine that the fetal is different from the uterine placenta. The muscular tissue of the tube does not undergo progressive hypertrophy, but on the contrary presents pronounced atrophy. The peritoneum is irritated in greater or less degree. The remainder of the tube is scarcely changed, except that the fimbriated extremities are relaxed. In the 55 cases of tubal pregnancy the portion of the tube directed toward the broad ligament was the seat of insertion of the ovum in only 11 cases.

In the course of the gestation the uterus increases in size. The development of a sympathetic uterine decidua is constant, but seldom of equable distribution. The decidua may be absorbed, while the ectopic pregnancy continues. Most cases of ectopic pregnancy terminate by tubal abortion—expulsion of the ovum through the abdominal opening of the tube. This is most common in the first three months: Of 56 cases it occurred in the first month in 15, in the second month in 13, in the third month in 11, in the fourth month in 7, in the fifth month in 4, in the sixth month in 2, in the seventh month in 1, in the eighth month in 2, in the ninth month in 1. Pregnancy may also be interrupted by influences acting unfavorably upon the uterus. The interruption is most commonly the result of the inevitable physiologic incongruity between the growing ovum and its repository. Tubal abortion results from the rupture of delicate bloodvessels, in the absence of an adequate muscular development. Rarely, spontaneous recovery occurs, but the convalescence is tardy, and even when the danger of shock has passed, the possibility of recurrent attacks of disintegration and suppuration cannot be entirely eliminated. Localized pelvic peritonitis is frequently found. Of 241 cases tabulated by Schauta that were left to themselves, rupture and hemorrhage into the abdominal cavity occurred in 128; rupture with the formation of a hematocele and peritonitis occurred in 22; rupture into the bowel in 34; rupture into the bladder in 9; rupture through the ab-

dominal walls in 5; rupture through the vagina in 4; expulsion through the uterus in 6; incarceration (ileus) in 4; lithopedia without discomfort in 29. Martin observed 5 cases, in all of which death took place. Only exceptionally does the usual train of symptoms of pregnancy appear, but some of the symptoms are always present. Early typical symptoms are wanting and are replaced by signs of peritoneal disturbance. Menstruation is irregular: sometimes absent, sometimes scanty, sometimes profuse. In the first three months the diagnosis can only be made with probability. The greatest importance is attached to recurrent attacks of pain and anemic collapse. In the question of prognosis the life of the child scarcely enters. Of 265 cases treated by expectant measures, 63.1 per cent. terminated fatally; while of 585 operated on, 76.6 per cent. recovered. The best treatment is believed to be celiotomy with complete enucleation of the gestation-sac.

The Identity of Syringomyelia and Leprosy.—An important paper was recently read by DR. ZAMBACO before the French Académie de Médecine on the identity of syringomyelia and leprosy. He had seen in Constantinople a considerable number of lepers, and became gradually convinced that the affection described as Morvan's disease, or syringomyelia, was no other than leprosy. He had also carefully studied the subject in Brittany, where syringomyelia had been first described, and where later on the disease was reported to occur frequently. He observed in all cases which were detained in hospital an incurable deformity of fingers and various other trophic changes, such as the loss of one or more phalanges, muscular atrophy, anesthesia, or ulcerations, and all these symptoms he had previously observed in lepers. Photographs of a large number of these were shown, which indicated a great resemblance between the two affections. Names of localities, such as *lambezeller*—*i.e.*, "leper village"—and of cemeteries, bridges, etc., which are still called *des lepreux*, testify to the fact that the disease has been endemic in Brittany since the earliest times. Old pictures of saints and fairies represent lepers just as they appear now. In a picture, for instance, of the miracles of St. Vincent, the saint is represented as restoring to a leper child its missing fingers. Dr. Zambaco believes that he is justified in concluding from stones, figures, and other objects found in many graves in Brittany that leprosy was imported into the country by the Phenicians. He had discussed the subject with many physicians in various hospitals in Paris also, who fully admitted the resemblance between the affections. A case in Charcot's ward, which had been diagnosticated as typical syringomyelia, and in which several fingers had been painlessly amputated, was brought to the Hôpital St. Louis and introduced to MM. Vidal, Besnier, Fournier, and Hallopeau, all of whom declared the patient to be a leper. In some Oriental countries leprosy assumes a much severer form than it does in Brittany, where the disease often remains abortive, and appears to inexperienced observers as an entirely different or even perfectly new disease, and as such Morvan described it. His syringomyelia, however, comprises, according to Dr. Zambaco, various diseases which should be separated, one division clearly representing "lepra anesthetica," as Von Daniellsen has described it, while others still lack an exact description. Permanent residents of Constantinople are not subject to leprosy, and in those rare instances in which it has been acquired it has always been found that the ancestors of the patients had lived in the Cyclades or other islands of the Greek archipelago.—*The Lancet*, October 8, 1892.

THERAPEUTIC NOTES.

The Medical Treatment of Perityphlitis.—SAHLI considers that the first step in the management of a case of perityphlitis is to interdict the ingestion of food and drink by the mouth, to control vomiting, and to prevent meteorism. The patient can be nourished by the administration once, twice, or thrice daily, of the following enema at a temperature of 104°:

℞.—Eggs	no. iij.
Sodium chloride	gr. xlv.
Peptone (dry)	ʒijss.
Beef-tea	ʒvj.—M.

To control thirst six ounces of pure water at a temperature of 104° may be given by the bowel as required. If the thirst is thus not satiated, the patient may be permitted to take from time to time a mouthful of cold water. A second important consideration is the systematic employment of opium, preferably in the form of the wine. Of this ten drops are at first given; then every hour, and later every second hour, from five to seven drops are given. As soon as the pain has disappeared, the patient takes but five drops every three hours. If the pain returns, the process is rebegun with ten drops. Locally, an ice-bag is at first applied, which is subsequently replaced by cataplasms. When the pain has entirely disappeared, the opium is withdrawn, and the administration by the mouth of such food as eggs, bouillon, milk, and chopped meat is attempted. Constipation is to be relieved by means of enemata; purgatives are to be avoided. The patient can get out of bed when all evidence of fever has disappeared and pressure in the right iliac fossa occasions no pain.—*La Semaine Médicale*, No. 51.

For Dysentery.—

℞.—Vini opii	gtt. xv.
Acid. tannic.	ʒij.
Acid. boric.	ʒiv.
Aquæ	fʒxijss.—M.

S.—By enema during twenty-four hours, in four equal parts, to each of which is added twice or three times as much water hot enough to make the temperature 96.8°. The enemata should be retained for a minute or two minutes; it is well to precede the first by a purgative dose of castor oil.

LIEBERSON, *La Semaine Méd.*, No. 5.

For Cholera.—Among the many recommendations for the treatment of cholera may be mentioned that of KIRCHNER (*Berliner klin. Wochenschr.*, 1892, No. 43, p. 1073), who proposes the administration by the mouth of full doses of hydrochloric acid in 1 per cent. mucilaginous solution, together with the injection high up into the bowel of large quantities of a ½ per cent. solution of chloroform, or of a 0.15 per cent. solution of hydrogen dioxide.

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SATURDAY, NOVEMBER 19, 1892.

REPORT OF THE PENNSYLVANIA COMMITTEE ON LUNACY.

THE recently issued report of the Committee on Lunacy of the Board of Public Charities of the Commonwealth of Pennsylvania for the year ending September 30, 1891, shows that there were on that date 7649 insane in the various institutions throughout Pennsylvania. The State hospitals contained 5367; private hospitals, 620; almshouses, 1648; penitentiaries and jails, 14.

For some years the insane have increased faster than the accommodations of the State institutions, and as a consequence the five State hospitals for the insane contain in the aggregate 1000 more patients than they can comfortably accommodate. Notwithstanding this fact they exhibit, in their statistical reports, results as good as those noted in previous years.

Through advance reports received from the Superintendent of Census, the Committee announces that whereas in 1880 there was one insane person to every 615 persons in the State, in 1890 there was one to every 620—thus showing a slight decrease of insanity. This announcement of the Committee, based upon the best obtainable data, is as gratifying as it is reassuring.

The Legislature passed a bill which the Governor approved June 22, 1891, appropriating half a million dollars for the purchase of 500 acres of land and the erection thereon of suitable buildings for an institution to be known as the State Asylum for the Chronic Insane of Pennsylvania. Patients will not be admitted directly to this asylum, but will be sent to it from other State institutions when they shall have become chronic cases. The site chosen by the special commission is situated eight miles west of Reading, a point nearly equally distant from the State hospitals at Norristown, Danville, and Harrisburg. This institution is to be a place of refuge, an asylum in which humane and intelligent care will be given the large number of chronic insane who are no longer amenable to strictly medical treatment. Opportunities for all kinds of labor will be assured, so that large numbers will be daily employed. It is believed that the cost of maintenance can be kept within the limit prescribed by law—$2.50 a week per capita—by curtailment of certain expenditures deemed unnecessary for chronic insane patients and by freely utilizing the labor of the inmates. With large numbers of the chronic insane removed from the State hospitals, the Committee hopes to make these institutions hospitals in fact as well as in name. As there are nearly 2000 insane in the State, city, and county asylums of Western Pennsylvania, the site chosen for the new asylum (which is to draw patients from the entire State) seems to be somewhat unjust to the residents of the western part of the State. It is not unlikely, however, that at some future time this will be mended by the erection west of the Allegheny Mountains of a second asylum for the chronic insane.

There are 233 insane criminals and criminal insane distributed in four of the State hospitals. The impolicy of compelling the innocent insane to associate with the criminal insane is evident to the thoughtful; yet the Legislature has refused to provide a separate institution for these classes, although frequently urged by the Committee to do so.

In its report, the Lunacy Committee makes no mention of separate provision for epileptics, but we understand that they have recently considered the matter. Their report shows that there are 527 epileptics in the institutions. The famous epileptic colony at Bielefeld, in Germany, which has been in successful operation for nearly thirty years, during which time it has grown from a handful of patients to a village of 1200, has long illustrated the value

of separate care for epileptics. We say village, for a village it is, being made up of a large number of small buildings almost totally devoid of "institutional" appearance, the inhabitants as nearly as possible living an ordinary village life. The various grades of patients are carefully and extensively classified. The village contains a church, a school, stores, and numerous workshops. The most varied kind of employment is afforded, and the special capacity of each patient is considered. A number of similar institutions are in operation throughout Germany and other parts of Europe. About a year ago the erection of the first institution for the separate care of epileptics in this country was begun at Gallipolis, Ohio. Last spring the New York Legislature passed a bill providing for the establishment of a colony in that State capable of accommodating 600 epileptics.

The Committee omits discussion of the question of the separate care of another exceedingly troublesome class, viz., inebriates. An English alienist has remarked that it is a great injustice to the decent insane to compel them to associate with inebriates; on the other hand, the alcoholic, committed as insane, complains much of his enforced association with the insane. In Connecticut a special law governing inebriates appears to work well.

The Committee strongly favors the early hospital-treatment of insanity, and deplores the fact that often patients are not sent to hospitals until they become dangerous. There is much force in this. Yet it must be conceded that there are many cases of insanity that could be treated better outside of than in an asylum if physicians generally were better acquainted with insanity. As it is, not a few cases of puerperal mania, simple melancholia, and other mild forms of insanity are successfully treated outside of asylums by skilled physicians.

We must take issue with the Committee when it dissents from DR. CHAPIN'S view that the "practice of hospitals for the insane might assimilate nearer to that of general hospitals for the sick and injured in the reception of patients." Certainly there is a striking difference between insanity and ordinary physical diseases. The insane man often resists treatment, while he who suffers from physical disease gladly welcomes it. But, after all, the difference between the general hospital and the hospital for the insane ought to be minimized instead of being made greater. Pennsylvania law permits an insane person to be committed and recommitted to an asylum for a period of seven days. In this way the formality of the usual legal commitment is escaped. It was thought that this law would promote early treatment of insanity. But few persons have availed themselves of it, largely, we think, because little has been done to acquaint friends of patients of its existence. In Massachusetts a similar but better law has resulted in much good. We should be glad to see the experiment tried of permitting a few general hospitals to receive recent cases of insanity in properly equipped wards. We believe that this would promote early treatment of insanity and would spare many persons what to them seems a family disgrace—the commitment of a relative to an insane asylum. It would foster the idea, both among the profession and the laity, that insanity is a sickness as truly as is pneumonia or dysentery.

The hospitals for the insane of this State have contributed too little to the scientific side of psychiatry. In large part this is due to the insufficient number of medical officers in these institutions and the great amount of routine and clerical work that they are compelled to perform. But during the past few years a gratifying increase in contributions to the medical press is to be noted. We should be glad to see superintendents relieved of all business management of hospitals; an increase in the number and in the pay of assistant physicians; the appointment of pathologists in hospitals that do not now employ them. New York's plan of appointing assistant physicians from candidates who have passed a successful examination before a central board commends itself to us.

The Committee has done noble work in the past in causing to be transferred to the State hospitals insane persons who were improperly cared for in their own homes or in almshouses. Few counties now maintain their own insane, and in these the character of the care and medical attendance has vastly improved in character.

Probably Pennsylvania will, sooner or later, have a lunacy board similar to that of New York, which consists of a small number of well-salaried men who devote all of their time to the work. In favoring this change we wish to be understood as casting no unkind reflections upon the present Committee or upon any of the distinguished gentlemen who comprise it. But the State can hardly expect these gentlemen of large affairs to give without compensation

the amount of personal attention to the work that would be most desirable. The importance of thorough supervision of the insane in the State by such a central board can scarcely be over-estimated.

BIOLOGIC THERAPEUTICS.

MEDICINE has entered upon a new era in therapeutics, which may appropriately be designated biologic. The scientific world greeted with cordial admiration the synthetic products of the chemist's skill, but we stand to-day on the threshold of developments the magnitude of which is beyond comprehension. Since the birth of the young science of bacteriology practical minds have assumed an expectant attitude. Skepticism has largely given way to confidence, and excessive enthusiasm to a calmer judgment. It soon became apparent, in a manner and to a degree in which it had never been before, that many diseases carried with them the elements of their own cure. Of course, it had been recognized that certain diseases are self-limited, and the phenomena of natural and acquired immunity were duly appreciated; but it required the knowledge gained by the advances in bacteriology to afford a rational explanation of these various phenomena. There is yet much to learn. The beginning has but been made. Enough, however, has been seen to teach that disease has its chemistry, and that the treatment of the future will depend upon a knowledge of this fact and the application of chemic laws. It is not too much to hope that the treatment of the future will largely be specific, that is, in the employment of a definite remedy in the treatment of a given affection, just as mercury and iodine are to-day employed in the treatment of syphilis, quinine in the treatment of malarial disease, and salicylic acid in the treatment of rheumatism. The groundwork of this new system of therapy has been already laid by PASTEUR as to hydrophobia, by KOCH in regard to tuberculosis, by BEHRING, KITASATO, WASSERMAN, and EHRLICH as to diphtheria, by TIZZONI, CENTANNI, and CATTANI as to tetanus, by the KLEMPERERS as to pneumonia, by FERRAN, HAFFKINE, and KLEMPERER as to cholera.

STERN (*Deutsche medicin. Wochenschr.*, 1892, No. 37, p. 827) has made an interesting contribution to this subject. He had previously demonstrated that human blood-serum possesses the property of destroying the bacilli of typhoid fever. He now endeavored to determine if the bactericidal activity of the blood-serum to the bacillus of typhoid fever is increased in persons that had recovered from an attack of that disease; if the blood of such persons has any curative action upon animals inoculated with the bacilli of typhoid fever; and if this blood has the property of neutralizing the poisons generated by the bacilli of typhoid fever. Seven cases were examined, six at intervals of from five days to five and a half weeks after defervescence had set in, and one, who was under treatment for sciatica, seventeen and a half years after an attack of typhoid fever. It was found that the bactericidal activity of the blood-serum to the bacilli of typhoid fever was distinctly diminished in persons recently convalescent from typhoid fever, in comparison with the conditions present in persons that had never had typhoid fever. It was further found that, while the serum of a healthy person exerted no modifying influence upon the toxicity of bouillon-cultures of the bacilli of typhoid fever with which it was mixed, the serum of persons recently convalescent from typhoid fever exerted a distinctly modifying effect of an attenuating character. It was also demonstrated that a filtered extract of sterilized cultures of the bacilli of typhoid fever could be safely injected in doses otherwise lethal, if previously admixed with the blood-serum of persons recently convalescent from typhoid fever.

From the foregoing it is clear that the protective influence of the blood-serum of persons recently convalescent from typhoid fever is not dependent upon a destructive action upon the bacilli themselves. It will not do, however, at once to jump to the conclusion that the serum neutralizes the toxic products of the bacilli. It is also possible that the serum renders the animal organism less susceptible to the influence of the toxic products. This doubt would be removed if it were shown that the diminution in the toxicity of a mixture of the serum and the sterilized extract were progressive.

The observations here recorded are most interesting, and are deserving of thoughtful consideration. They should be repeated and extended. They seem to bring us nearer to a correct conception of natural immunity and natural cure.

THE ALBUMOSES AND TOXALBUMINS FORMED BY THE ANTHRAX-BACILLUS.

IN 1889 MR. E. HANKIN published in the *British Medical Journal* a method of obtaining from a cultivation of the anthrax-bacillus an albumose that, injected in the proportion of one one-millionth of

the weight of a mouse and of one ten-millionth of the weight of a rabbit, gave to the animal a protection that prevented it from being affected by the anthrax-bacillus when inoculated therewith. In the year following BRIEGER and FRAENKEL published a work on the toxic albuminoid products secreted by the pathogenic microbes; and these products, to which they gave the name "toxalbumins," were obtained in a manner similar to that employed by HANKIN.

SIDNEY MARTIN in 1890 published his experiments in obtaining from an alkaline albuminous cultivation of the anthrax-bacillus an albumose that could be separated into proto-albumose and deutero-albumose; and, though his methods of obtaining the albumose were different from those employed by HANKIN and BRIEGER, still the original albumose produced in the mice immunity to anthrax when injected in doses sufficiently large. The only chemical difference that he found between the albumoses produced by the anthrax-bacillus and those that are encountered in tryptic digestion is that the former possesses a well-marked alkaline reaction.

HANKIN has called attention to the fact that all of the published experiments agree that these toxalbumins should be regarded as albumoses. This latter term is rather vague, the substances comprised under that designation forming a series related on the one hand to peptones and on the other to globulins; still the toxalbumins resemble the most typical albumoses—those described by BRIEGER and FRAENKEL as slightly soluble recalling the hetero-albumoses and dysalbumoses of KÜHNE, those more soluble being comparable to the proto-albumose and deutero-albumose. HUNTER, in his experiments with KOCH'S tuberculin, has isolated many different classes of albumoses that have different physiologic actions.

HANKIN divides albumoses into those that are slightly toxic, such as those formed during digestion, and those that are very toxic, such as the toxalbumins produced by bacteria. In the latter category we may include the toxalbumins that WEIR MITCHELL and REICHERT have found in serpent venom, and the toxalbumins of jequirity, ricini, and papaya. The question arises whether these toxalbumins are formed by the action of a diastase, such as pepsin, trypsin, etc., or whether they are formed more directly by the action of living protoplasm, without the intervention of a soluble diastase.

PETERMANN, in the *Annales de l'Institut Pasteur* for January, 1892, published a short protocol in reference to the experiments that he had made with the anthrax-toxalbumin described by HANKIN. He inoculated animals with this albumin in doses almost as large as those used by MARTIN, without producing any other effect than that of elevation of the temperature of from 1° to 2° C.; and the animal was quite as susceptible to inoculations of the anthrax-bacillus as an unprotected animal.

HANKIN and WESBROOK reviewed the former's work, and found that PETERMANN had made his cultivations of the anthrax-bacillus at too high a temperature; they state that the albumose derived from cultures made at a high temperature confers no more immunity than does an albumose made with the diastase secreted by the anthrax-bacillus, while the albumose produced at a lower temperature would produce immunity to anthrax in an inoculated animal.

They found that the anthrax-bacillus produced a proteolytic diastase that decomposed organized matter, in this decomposition forming an albumose. Such an albumose has no power to confer immunity. The bacillus also produces a toxalbumin directly, without the intervention of a diastase, that might be obtained in a state of relative purity, that is to say, without admixture with the digestive albumoses. In small doses this toxalbumin conferred on mice the power of resisting anthrax, which power sometimes went as far as complete immunity. In ordinary doses this toxalbumin produced no symptoms of poisoning in animals susceptible to anthrax; although in animals such as the rat, the frog, and the crawfish, that are ordinarily immune to anthrax, this albumose acts as an energetic toxine.

It will be seen that in these later conclusions HANKIN does not claim that his toxalbumin will confer absolute immunity, as he did in his first publication; but the results of all investigators show that the anthrax-bacillus elaborates in certain media a substance that confers a more or less protracted immunity to anthrax-inoculation, though further research is necessary to determine the various conditions essential for the production of that substance.

THE ALBUMINURIA ASSOCIATED WITH THE URIC-ACID DIATHESIS AND WITH OXALURIA.

AT a recent meeting of the Philadelphia Pathological Society, PROF. DA COSTA called attention to a most important subject, concerning which little

has hitherto been published. He pointed out that there is a group of cases exhibiting certain symptoms that might be held to be indicative of chronic nephritis, in which albumin and tube-casts appear in the urine, but in association with uric acid and urates, or with calcium oxalate, or with both. The specific gravity of the urine is invariably high; the quantity of albumin is variable, but usually small; the albuminuria is often intermittent; the tube-casts are not always found, and they are usually granular or hyaline, rarely epithelial, never oily. DR. DA COSTA'S observations extend over a number of years. In illustrative cases cited, in addition to other symptoms of lithemia, intestinal indigestion was marked, with flatulence, constipation, headache, and mental depression. Retinal changes were not present in any case. This fact and the high specific gravity of the urine were emphasized in differentiating the condition from interstitial nephritis, while the absence of dropsy throughout the clinical course of the affection and the invariably favorable prognosis—albumin and tube-casts disappearing under treatment—are additional discriminating features.

It should also not be forgotten that in cases of the uric-acid diathesis (or lithemia), in addition to the excess of uric acid and urates found in the urine, "phosphates and calcium oxalate are likewise frequently in excess; in cases attended with paroxysmal flushing red blood-corpuscles and albumin are occasionally found; sometimes a small number of tube-casts." The same conditions also exist in connection with obscure symptoms of so-called vasomotor ataxia.

The conclusion seems justifiable, that albuminuria is to be relegated to the position of a symptom that is to be interpreted only in connection with all other phenomena in a given case. PROF. DA COSTA expressed the opinion that so-called physiologic or cyclic albuminuria might fairly be considered as similar in the mechanism of its production to that form of albuminuria described by him, namely, as resulting from the irritation of the kidneys by the excessive amount of nitrogenous waste that they are called upon to excrete. As to the presence or absence of kidney-lesions, it was impossible to speak from post-mortem investigations, as, save in one case, the patients recovered; that case—a doubtful one—is still under observation. Nevertheless, if one may argue from clinical data—and we see no reason why this is not legitimate—the absence of permanent organic lesion seems to be proved. Most certainly the cases may be taken out of the category of "Bright's disease," and it is something gained to be able to assure a patient whose urine contains both albumin and casts that he has not "Bright's disease," and that he may recover.

That the organic nervous system is not uninfluenced by the disease is shown not only by the observations of vasomotor disturbance already cited, and by the depression that attends oxaluria, but also by the fact related both by PROF. DA COSTA and by one of the other speakers, that in some of these cases there is an afternoon elevation of temperature. This might be ascribed to the mechanical or chemic irritation produced by uric acid, but much more probably both the faulty metabolism, evidenced by the lithemia or oxaluria, and the nervous disturbances have their origin in the same cause. What that is we are not in a position to determine.

The treatment pursued consisted essentially in regulation of diet (milk and green vegetables being permitted, meats and highly nitrogenous foods diminished, and carbohydrates and fats interdicted), open-air exercise, and the administration of alkaline diuretics and laxatives, with an occasional mercurial.

Inhalations of oxygen were being tested.

THE PAN-AMERICAN MEDICAL CONGRESS.

THE appearance of the preliminary announcement of the first Pan-American Medical Congress, to be held in Washington next September, is at once a promise, a guarantee, and a call to action. Few have an adequate conception of the magnitude of this undertaking and of its significance to American medicine. It is very evident that it has now entirely passed the stage of doubt or indecision. The first thought that strikes one in glancing through the pamphlet of the preliminary announcement is as to the tremendous business and executive demands made upon the officers, and that so far have been splendidly met by the energetic Secretary-General, the President, and others. The officering of the long lists of the sections has been a work of the greatest difficulty and finest judgment, and one can only marvel at the excellence of the results.

But it is now time for all American physicians to respond to the invitation and the opportunity in a spirit of patriotism to our country and loyalty to our profession. It is not now a question of the success of the Congress, but as to whether we shall or shall not give that early and effective sympathy that constitutes each of us a helper and a part of

the success. The heavy expenses of organization, amounting to something like $5000, must be paid by the advance registration-fees. The Secretary-General is DR. CHARLES A. L. REED, Cincinnati, Ohio, who, upon request, will forward copies of the preliminary announcement. The Treasurer is DR. A. M. OWEN, Evansville, Ind., to whom should be remitted the registration-fee.

CORRESPONDENCE.

SUDDEN DEATH IN THE PUERPERIUM.

To the Editor of THE MEDICAL NEWS,

SIR: The subjoined report may prove interesting.

Mrs. C., a primipara, almost forty years old, was seen by me on November 4, 1891, at 11 P.M. She had been in labor, with moderate, irregular pains, for about six hours. She was small and spare, weighing about 100 pounds; quite anemic; of a nervous temperament; of a tuberculous family; and a sufferer with megrim, also inherited. Her wedlock was unfortunate, and her pregnant period an unhappy one.

The os uteri admitted the index finger only. The breech was presenting. Her pulse was 120, and the heart's action feeble. I gave her by the mouth morphine sulphate, gr. ¼, and atropine sulphate, gr. $\frac{1}{150}$, in a tablet, and waited for Nature's action. At 3 A.M. on the 5th I gave her another tablet, and again at 9 A.M. and at 2 P.M. The progress of the case being unsatisfactory, the friends were advised of the danger and of the necessity for assistance.

I was permitted to call Dr. Edward Pendleton to counsel and assist me. About 4 o'clock I administered chloroform, and Dr. Pendleton with his hand dilated the os, which was then about the size of a half-dollar, and drew down the feet. He then permitted the uterus to expel the child, but the head was retained, and the forceps was applied to extricate it. The child was still-born. The flow was moderate. The placenta was expelled in less than ten minutes, by the aid of the hand over the fundus. The woman was under chloroform for fifty minutes. I had with me the A. C. E. mixture and ether, but preferred the chloroform to begin with, because I was more accustomed to administer it, and we thought dilatation would be effected more speedily. I had been physician to the family with which she lived for many years, which gave her great confidence in me—much more, in fact, than I had in myself at the time. I saw her again five hours after delivery, when no untoward symptom was manifested, except that the pulse continued at 120.

On November 6th, twenty-four hours after delivery, I directed a teaspoonful of brandy to be given to her in a tablespoonful of water, after which I assisted her upon the commode, as she had failed to pass urine in the bed-pan and the attendant could not use the catheter, and I could not see her every eight hours. Directions were given not to allow her to get up without first taking a teaspoonful of brandy.

7th. Pulse, 112; temperature, 99.8°.

8th. Pulse, 112; temperature, 100°.

9th. Pulse, 108; temperature, 99.8°.

10th. Pulse, 108; temperature, 99°. I now removed two stitches that I had introduced in the perineum, with a favorable result.

11th. Pulse, 90; temperature, 99°.

13th. Pulse, 96; temperature, 98°. The woman complained of headache, until her bowels were moved by the action of a mild aperient tablet given on the previous evening. She felt some discomfort after taking food.

15th. Pulse, 88; temperature not taken. The bowels were again opened by the aid of a tablet given on the previous evening.

16th. The patient was given permission to sit up for twenty minutes, but she did not, because her head ached.

17th. Pulse, 96; temperature, 99.8°.

18th. The woman sat up for twenty-five minutes. At about 3.30 A.M. she felt an inclination to evacuate the bowels, and was helped upon the commode by an attendant, who had not been informed of my instructions to give brandy, and who, consequently, did not give it. The attendant stepped into an adjoining room to close a stove-door, and, on returning, found the patient on the bed, on which she had fallen or thrown herself. There was a momentary shaking or convulsive movement of the whole body, with pallor of the countenance, and death occurred within five minutes of the time at which she was assisted to the commode. Presumably, death took place by syncope or heart-failure. An autopsy was not allowed.

The points of interest to me were the proof, by death, of a dangerously weak heart, and the possibility of tolerating chloroform when aided by the use of morphine and atropine.

Furthermore, I believe that the confidence of the patient lessened the mental shock, which, to my mind, often contributes to the cause of death by anesthetics.

Respectfully,

N. W. LEIGHTON, M.D.

143 TAYLOR STREET, BROOKLYN, N. Y.

MORPHINE-POISONING.

To the Editor of THE MEDICAL NEWS,

SIR: On Monday morning, October 24th, at 1 A.M., Mr. S., a drygoods clerk, twenty-four years old, took ten grains of morphine sulphate, and held a revolver to the head of his room-mate, forbidding him to give any alarm. After a period of ninety minutes the drug had produced profound stupor; then the room-mate made his escape and notified a brother of the poisoned man. A physician was sent for and the stomach was washed out with a solution of tannic acid. Atropine, in doses of gr. $\frac{1}{10}$, was administered hypodermatically every half-hour until the pupils were dilated. One pole of a galvanic current was applied to the spine, the other to the nape of the neck. Walking the patient and beating with twigs were freely practised, but the treatment seemed of no avail. It was now eight hours after the dose was taken. The respirations were reduced to 7 per minute, the pulse increased to 135 per minute. The case appeared hopeless. The pupils were irregular; great cyanosis was present. In this extremity I administered one pound of coffee in

warm infusion *per rectum*. The patient woke up immediately. The enemata of strong coffee were kept up for twenty-four hours. The patient progressed rapidly to recovery. In all, three pounds of coffee were used. In my opinion the coffee treatment saved the life.

J. H. MCCASEY, M.D.

CONCORDIA, KANSAS.

REVIEWS.

TEXT-BOOK OF OPHTHALMOLOGY. By ERNEST FUCHS, M.D. Translated by A. DUANE, M.D. New York: D. Appleton & Co., 1892.

THE multiplication of text-books of ophthalmology seems to be endless, and excellent as in many respects it is, the present book was, in a medical sense, hardly demanded by the American practitioner. The ideal epitomization of this specialty is undoubtedly yet to come, though the author that shall be bold enough to undertake the task must be exceptionally well fitted for it, and should consider it long and well. With every new book the critic will ask more sharply whether the combined need of author and publisher, or that of science, is responsible for the work.

In his function of translator and editor, Dr. Duane has merited much praise. There is everywhere evident a conscientiousness and discrimination worthy of imitation by many who without capacity, either linguistic or scientific, have sought to be the introducers to us of the products of Continental scholarship. It is also needless to say that the publishers have done their part with equally commendable care and taste.

Yet another thing, the index, elicits our gratitude. It is such a help, a good index, and it is so rarely seen! If authors, instead of shoving this tedious work upon students or upon literary hacks, would see to it themselves, making it full, intelligent, and designed to help the reader—as this one is—they would find it good policy.

But it is the muscle and not the clothing that does the work! Does the matter of this book satisfy the English and the American ophthalmologist, or does it correspond with the need of the student? In diseases of the eye, very fairly; in operations, scarcely; in refraction, absolutely not.

It is proof of the quick march of progress in this special branch that many things of prime importance have come up since Dr. Fuchs wrote his treatise. For this, no blame can be given except that American work takes a long time to penetrate Germany, and a longer time to return to us in the shape of systematization and translation. The American must write the useful book for the American! For example, in the treatment of trachoma we look in vain for any mention of the rolling-process of Knapp, and wonder at the fact that only the ancient silver nitrate and copper sulphate methods of treatment are mentioned.

Want of space, however, compels us to omit many points marked, both for commendation and criticism, and proceed to quote some wonderful sentences in reference to refraction that show the pernicious influence that this book might have if they were not to every student of the eye luminous and ludicrous with error:

"In practice we generally abstain from determining the total hypermetropia, because atropinization is accompanied by effects which are disagreeable to the patient and which last several days."

"Full correction of the total hypermetropia is indicated only in those cases in which we have to combat a strabismus convergens which is beginning to develop."

"We correct the hypermetropia only as far as is required to relieve the asthenopia."

"The determination of astigmatism must be undertaken whenever in making our tests perfect vision cannot be attained with spherical glasses" [without paralysis of the accommodation, always].

"It is unnecessary to correct every case of astigmatism; this is done only when the patient wishes to see more distinctly or when he has asthenopic troubles."

"Regular corneal astigmatism can be determined by . . . . the ophthalmometer."

"In anisometropia we give the same glasses for both eyes, or correct only one eye and place a plane glass before the other."

MATERIA MEDICA AND THERAPEUTICS. A Manual for Students and Practitioners. By L. F. WARNER, M.D., Attending Physician to St. Bartholomew's Dispensary, New York. Edited by BERN. B. GALLAUDET, M.D., Demonstrator of Anatomy, College of Physicians and Surgeons, New York. (STUDENTS' QUIZ SERIES.) Philadelphia: Lea Brothers & Co., 1892.

HOWEVER much teachers may decry the use of compends on the various branches of medicine, there is nevertheless a demand for such works on the part of the student. They are doubtless the outgrowth of a system of education that ought to pass away, but the short time devoted to medical education, and the enormous mass of material, as represented by the large text-books, to be studied, make the use of compends of any given subject temporarily, at least, not only desirable, but necessary.

This volume is the fifth of "The Students' Quiz Series" issued by Lea Brothers & Co. It is arranged in the form of questions and answers. While the author states that the compend is based upon the works of Brunton, Wood, Bartholow, and others, as well as upon notes of Prof. Peabody's Lectures, it is very evident that the arrangement of the topics and the classifications adopted are those of Prof. Wood—a merit, it may be said, which ought to enhance its value. A work of this kind intneded for students must necessarily contain only the well-known and best-established facts pertaining to the subject. The author states in the preface that it has been his aim to "state concisely and completely the bare essentials as far as it is possible to glean them from a mass of more or less conflicting authority." An examination of the answers justifies the opinion that he has succeeded quite well. They are complete, and for the most part accurate. The statement, however, that alcohol should be given in chloroform narcosis should be corrected, as it has been shown by modern experiments, especially by the able researches of Wood, that alcohol under such circumstances acts as a cardiac depressant. The recommendation of amyl nitrite in puerperal convulsions is of doubtful value, as it might lead to dangerous hemorrhage from relaxation of the blood-vessels. The usefulness of potassium permanganate as an antidote in cases of phosphorus-poisoning is not referred

to. Errors of this character, however, may depend upon conflicting authorities. The book has many of the merits as well as many of the faults of all works of this character.

PRACTICE OF MEDICINE. By EDWIN T. DOUBLEDAY, M.D., Member of the New York Pathological Society, and J. D. NAGEL, M.D., Member of the New York County Medical Association. (STUDENTS' QUIZ SERIES.) Philadelphia: Lea Brothers & Co., 1892.

THIS little book is not devoid of some sins of omission and of commission that detract somewhat from its value. For example: On page 19 the expression "Fever is from 102°–104° F." is used. The word *temperature*, instead of *fever*, would be more fitting. Among the common sequelæ of scarlatina no mention of arthritis is made. The question "What is vaccination?" is answered "Inoculation with humanized vaccine virus." The great majority of vaccinations have been and still are made with bovine virus, and the foregoing answer, thus unqualified, is not correct. It has been rather definitely settled that true diphtheria is caused by the Klebs-Loeffler bacillus, and yet no mention of this fact is made in the summary of the etiology of diphtheria. In other diseases, the causes of which are not more certain, the authors mention the respective specific microörganisms. No notice is given of the ameba coli in the etiology of dysentery. The causative agent of the malarial fevers is given as "apparently a micrococcus." We did not know the plasmodium malariæ had fallen from its position. Dilatation of the stomach and the great subject of gastric neuroses were better left untouched in such brief epitomes.

Praise, however, is due for the very good epitome of the different forms of paralysis and spasm, and other parts of the section upon nervous diseases are commendable. The book is "one of the best of its kind."

THE SURGICAL TREATMENT OF NEURALGIA OF THE FIFTH NERVE (TIC DOULOUREUX). By WILLIAM ROSE, M.B., B.S. Lond., F.R.C.S., Joint Professor of Surgery in King's College, London, and Surgeon to King's College Hospital, etc. 8vo, pp. 88, with 19 illustrations. London: Baillière, Tyndall & Cox, 1892.

THIS monograph consists of the reprinted Lettsomian Lectures for 1892, and will rank in scientific and practical value with the very best contributions upon trigeminal neuralgia.

The writer reviews at length the etiology and pathology of the affection, and, while non-committal, yet appears to lean toward the theory of vascular derangement as the principal causative factor. All methods of surgical interference are described in a very lucid and direct manner, while that of removal of the Gasserian ganglion as performed by the writer, who has gained considerable reputation in this field, is treated with elaboration. He has removed the ganglion six times within four years, with four apparent cures, one death, one relapse, the loss of one eye and threatened destruction of two others, and one case of resultant ankylosis of the jaw. It is admitted that this operation is difficult and not without considerable danger, yet when we consider the deplorable condition of these cases, the percentage of recoveries, if maintained, must be considered a sufficient justification.

CHARACTERISTICS. By S. WEIR MITCHELL, M.D., L.L.D. (Harvard). New York: The Century Co., 1892.

THE MEDICAL NEWS regrets that it cannot give space to a proper review of Dr. Mitchell's most interesting series of conversational character-studies—for "Characteristics" can hardly be called a novel. The book is peculiarly full of interest for medical men, for the hero, Owen North, is a physician, and there is incidental discussion of many of the problems, psychic and physical, that most attract and perplex the medical observer. The characters are drawn, or rather are made to unfold themselves, with Dr. Mitchell's usual clearness and insight into human nature, and with a strength and breadth very different from that of the undecided consultant who "lifts into prominence for himself all the minor symptoms." The book is not one to be read "straight through," but to be taken up now and again for a delightful half-hour.

NEWS ITEMS.

Dr. A. Reeves Jackson, of Chicago, died November 12th, of cerebral hemorrhage.

Dr. Enoch Fithian, of Greenwich, N. J., died November 15, 1892, in his 101st year. He was graduated from the University of Pennsylvania in 1816.

Eleventh International Medical Congress.—In addition to the names already announced (THE MEDICAL NEWS, October 15, p. 448) the following are included in the membership of the American Sub-committee of the Eleventh International Medical Congress, to be held at Rome from September 24 to October 1, 1893: W. T. Briggs, Nashville, Tenn.; H. P. Bowditch, Boston, Mass.; C. Cushing, San Francisco, Cal.; Norman W. Kingsley, D.D.S., New York; D. B. St. John Roosa, New York. The French Railway Company has offered to the members of the Congress a reduction of 50 per cent. on its fare.

BOOKS AND PAMPHLETS RECEIVED.

Bulletin of the Association of American Medical Colleges. St. Paul, Minn., 1892.

Handbuch der Physiologischen Optik. Von H. von Helmholtz. Zweite umgearbeitete Auflage. Siebente Lieferung. Hamburg und Leipzig: Leopold Voss, 1892.

The Ontario Medical Register for 1892.

Announcement of the College of Physicians and Surgeons of Ontario for the Academic Year, June, 1892–93.

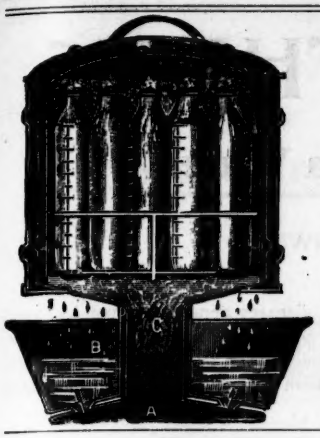
A Successful Case of Cholecystotomy for the Removal of Gallstones Obstructing the Cystic Duct. By William Easterly Ashton, M.D. Reprint, 1892.

The Pathology of Intestinal Obstruction Following Abdominal and Pelvic Operations. By William Easterly Ashton, M.D. Reprint, 1892.

Report of the Committee on Cow's Milk to the Medical Society of New Jersey. By Henry L. Coit, M.D., Chairman. Pamphlet, 1892.

Supra-pubic Cystotomy for Chronic Cystitis and Cystic Hemorrhage. A Report. By James B. Kinnaird, M.D. Reprint, 1892.

Experimental Research on the Implantation of the Ureters into the Rectum. By Harvey Reed, M.D. Reprint, 1892.



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DR. J. T. LeBLANCHARD, Professor Montreal Clinic, SM., SN., V. U. "I have used Buffalo Lithia Water in the most obstinate cases of Chronic Inflammation of the Bladder, in Stone of the Bladder, in Uric Acid Gravel, with the most efficacious results."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica in the Medical Department of the University of Virginia. "Buffalo Lithia Water Springs, No. 2, has proved far more efficacious in many diseased conditions than any of the simple Alkaline waters. I feel no hesitancy whatever in saying that in Gout, Rheumatic Gout, Rheumatism, Stone in the Bladder, and in all diseases of Uric Acid Diathesis, I know of no remedy at all comparable to it. Its effects are marked in causing a disappearance of Albumen from the Urine."

DR. HARVEY L. BYRD, Of Baltimore, President and Professor of Obstetrics and Diseases of Women and Children in the Baltimore Medical College, formerly Professor of Practical Medicine, etc. "I have witnessed the best results from the action of the Buffalo Lithia Water, Spring No. 2, in Chronic Gout, Rheumatic Gout, Rheumatism, Gravel and Stone in the Bladder, and I do not hesitate to express the opinion that in all deseases depending upon or having their origin in Uric Acid Diathesis, it is unsurpassed, if indeed it is equaled, by any water thus far known to the Profession."

DR. ALLARD MEMMINGER, Professor of Chemistry, Medical College, State of South Carolina. "I have used in my own case and prescribed for others Buffalo Lithia Water for Uric Acid trouble with excellent results, and I regard it as the safest, surest, and most agreeable way of removing from the system this most pernicious derivative of Urea, Uric Acid, the retention of which is followed by so many distressing symtoms, embracing Gout, Calculi of the Kidney and Bladder, Herpetiform Neuralgic affections, cases of Mental Depression and Nervous Irritability and Nervous Asthma caused by the irritating action of Uric Acid on the bronchial tubes."

JAMES L. CABELL, A. M., M. D., LL. D., Professor of Physiology and Surgery in the Medical Department in the University of Virginia, President of the National Board of Health, etc., etc. "The Buffalo Lithia Water Spring, No. 2, contains in notable quantities two of the alkalies which are accredited as extremely valuable in the treatment of Gout, Lithiasis and Liver Affections. I refer to the Carbonates of Potash and Lithia. It is now well known that both of these alkaline carbonates have an ascertained value in cases of Uric Acid Diathesis connected with gravel, and in cases of Chronic Gout, because of their affinity for Uric Acid, and the great solubility of the salts which are formed by their union with that acid. If this were all, the range of their therapeutical indications would be comparatively restricted; for, though dissolving the Uric Acid already formed, they would fail to meet the most important indication—that of rooting out the diathesis on which the formation depends. It is, however, held by eminent medical authorities, that 'the beneficial effects of alkalies are not due to their neutralizing acidity, or to any direct action upon Uric Acid,' but that they 'seem to do good by combatting the pathological state on which the formation of Uric Acid depends.' "We are not, however, left to theory, as to the action of this water, as numerous testimonials from the profession seem to have established the fact that it has already accomplished results, such as its composition would indicate." "In my experience it is a remedy of decided efficiency in the Lithaemic condition. I have also found it a direct tonic for the nervous system in cases of Cerebral Exhaustion. The nervous symptoms, however, in these cases may have been due to a Lithaemic condition."

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